Thesis/
Reports
Arnold,
J. R.

MAROON BELLS - SNOWMASS WILDERNESS

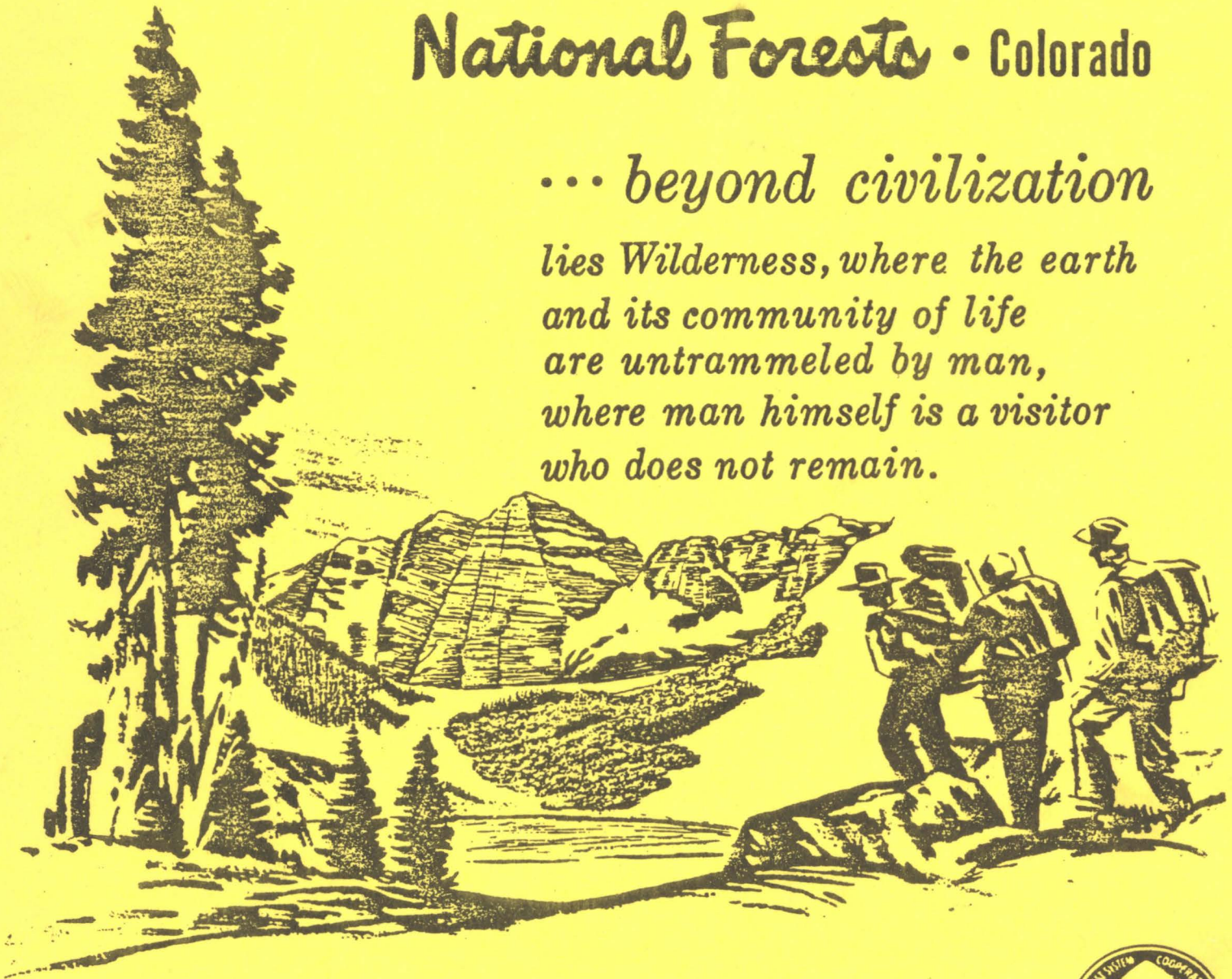
DRAFT

Interim Management Direction

Gunnison and White River National Forests • Colorado

... beyond civilization

lies Wilderness, where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.



UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

LIBRARY COPY
ROCKY MT. FOREST & RANGE
EXPERIMENT STATION

AD-33 Bookplate
(1-63)
U. S. FOREST SERVICE
NATIONAL FT. COLLINS
AGRICULTURAL
LIBRARY
LIBRARY COPY
ROCKY MT. FOREST & RANGE
EXPERIMENT STATION

College of Forestry and Natural Resources
Department of Recreation Resources

Colorado State University
Fort Collins, Colorado
80523

September 16, 1982

Dr. B. L. Driver
Rocky Mountain Forest and
Range Experiment Station
USDA Forest Service
240 West Prospect
Ft. Collins, CO 80526

Dear Bev:

Enclosed is the Maroon Bells-Snowmass Wilderness Draft Interim Management Direction. The Monitoring Plan, required as per Amendment 6, Objective 2, to Cooperative Agreement 16-841-CA, was developed in cooperation with NFS personnel and was incorporated directly into the Interim Direction to reflect the continuous nature of the monitoring activity. Management Prescriptions Sections I to V specify monitoring activities under "ACTIONS" with specific "Target Dates." Where appropriate, monitoring/evaluation activities are further described in the Management Unit Direction sections. This document is submitted to satisfy contractual requirements of the aforementioned amendment and objective.

Sincerely,

J. Ross Arnold

JRA/cat
enc.

PREFACE

The American people highly value our country's rich endowment of natural, social, and historic resources. The wilderness resource is an important part of that endowment. Appreciation of those values led to passage of the Wilderness Act of 1964 and rapid growth of our National Wilderness Preservation System.

This management direction for the Maroon Bells-Snowmass Wilderness has been developed using the best wilderness management planning techniques available. It reflects the commitment of Region 2 of the USDA-Forest Service to meet the challenges of Section 2(a) of the Wilderness Act which states that wilderness areas

> ". . . shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character . . ."

This management direction is an example of the quality product that can be achieved when land and resource managers, researchers, and the public work closely together. That team must continue to work together to monitor the implementation of this management direction. Public comments will continue to be welcomed during the monitoring process.

_____

Craig Rupp
Regional Forester

LIBRARY COPY
ROCKY MT. FOREST & RANGE
EXPERIMENT STATION

TABLE OF CONTENTS

		Page
PREFACE		i
I.	INTRODUCTION	1
II.	PURPOSE	1
III.	COMPONENTS OF WILDERNESS	5
	Biophysical Component	5
	Social Component	5
	Managerial Component	7
	Integration of Components	7
IV.	PLANNING APPROACH	7
	Steps of the Planning Process	7
	Management Concepts	10
	Management by Objectives	10
	Management Area Stratification	10
	Levels of Acceptable Impact	15
	Planning Tools Used	15
V.	MBSW MANAGEMENT DIRECTION	18
	Management Prescriptions	18
	Management Prescription #1: Area-Wide	20
	Management Prescription #2: Transition Opportunity Area	32
	Management Prescription #3: Semi-Primitive Opportunity Area	35
	Management Prescription #4: Primitive Opportunity Area	38
	Management Prescription #5: Pristine Opportunity Area	41
	Management Unit Direction	44
VI.	APPENDICES	

LIST OF FIGURES

		Page
1.	General Vicinity Map	2
2.	Wilderness Elements	6
3.	Planning Process	8
4.	Boundaries Within the Study Area	11
5.	Relationship Between Recreation Opportunity Spectrum and Wilderness Opportunity Spectrum	12
6.	Generalized Example of Conditions and Actions for each Wilderness Opportunity Area	13
7.	Management Units	14
8.	General Example of the Level of Acceptable Biophysical Impact	16
9.	General Example of Levels of Acceptable Social Impact (Use Activities)	16
10.	Maroon Bells-Snowmass Wilderness Management Direction	19

LIST OF APPENDICES

A. Environmental Assessment

B. Overview of the Management-Research Demonstration Project for the Maroon Bells-Snowmass Wilderness

C. Policy Guidelines Governing Management of Wilderness Resources

D. Recreation Survey Data

E. Managing Wilderness Using the Wilderness Opportunity Spectrum Concept

F. Trend and Demand Analysis

G. Wilderness Rangers' Reporting

H. Fish Stocking Program

I. Code-A-Site and Registration/Permit Instructions

J. Fire Management Plan

K. Capability Areas

L. MBSW Species List

M. List of Brochures and Other Information

N. Water Quality

O. Wilderness Travel Simulator

P. Camping Capacities

Q. Visibility Monitoring Guidelines

R. Trail Maintenance Levels

S. Campsite Condition Rating Classes and Size of Campsites

T. Monitoring and Evaluation

U. Maps

V. Justification for Specific Management Actions

W. Rationale for Wilderness Party Size Limitations

I. INTRODUCTION

The Rocky Mountain Region of the USDA-Forest Service is cooperating with the Rocky Mountain and Intermountain Forest and Range Experiment Stations and Colorado State University on a five-year Cooperative Management-Research Demonstration Project (see Appendix B). One purpose of the project is to develop management direction for the Maroon Bells-Snowmass Wilderness by (1) applying technology available to wilderness and dispersed recreation planning and management, (2) further developing that technology, (3) monitoring, evaluating, and refining the application of that technology, and (4) accomplishing these tasks through a cooperative effort of communication and coordination between management, research, and the public. Another purpose of the Cooperative Management-Research Demonstration Project is to fully document the rationale and process used in developing the MBSW direction. The first 17 pages discuss this rationale and process and serve as reference material for other planners, managers, and interested publics. The specific management direction begins on page 18.

The Maroon Bells-Snowmass Wilderness and adjacent RARE II lands recommended for wilderness (hereafter referred to as MBSW) are located in central-western Colorado, approximately 150 miles (240 kilometers) west of Denver. They encompass approximately 185,000 acres (74,900 hectares) on the White River and Gunnison National Forests. The communities of Aspen, Snowmass, Basalt, Carbondale, Redstone, Marble, and Crested Butte are located in the immediate vicinity (see Figure 1).

This plan provides management direction for the MBSW and has six major sections:

I. Introduction
II. Purpose
III. Components of Wilderness
IV. Planning Approach
V. MBSW Management Direction
VI. Appendices

Section V specifies the interim management direction for the MBSW until revised and/or incorporated into the Forest's land and resource management plan due in 1983.

II. PURPOSE

Management direction focuses on production, delivery, and preservation of those wilderness-related benefits specified in the Wilderness Act of 1964 and in the Department of Agriculture and Forest Service policy guidelines. Appendix C shows the Policy Guidelines Governing Management of Wilderness Resources. Selected excerpts from these wilderness management guidelines follow:

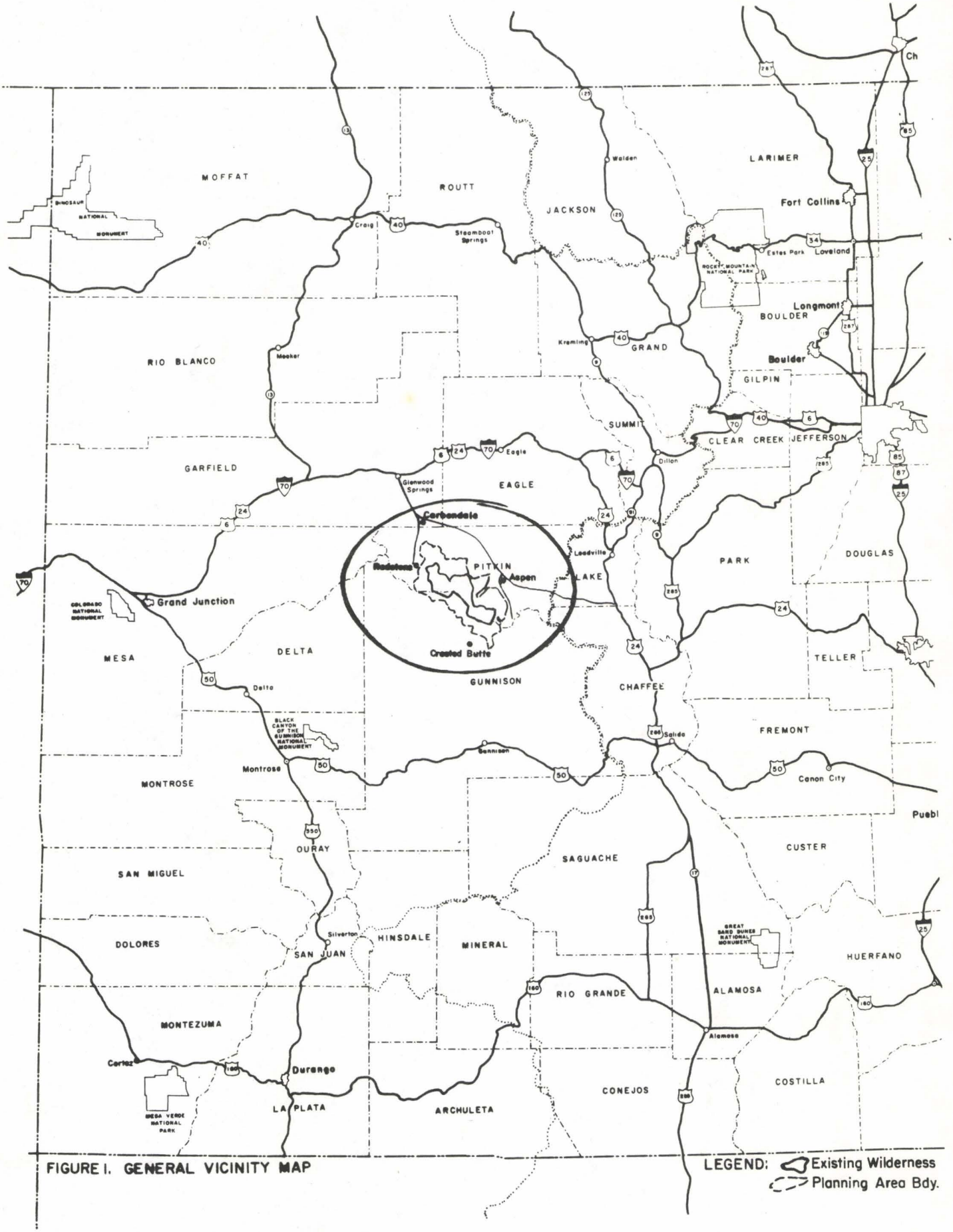


FIGURE I. GENERAL VICINITY MAP

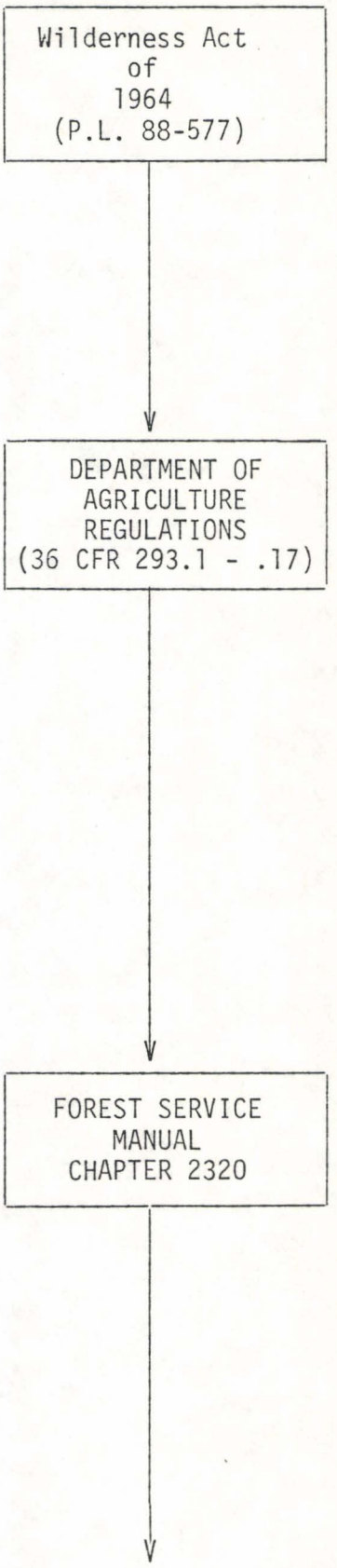
LEGEND: Existing Wilderness
Planning Area Bdy.

". . . shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character . . ." (Section 2a)

". . . wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use." (Section 4b)

". . . In carrying out such purposes, National Forest Wilderness resources shall be managed to promote, perpetuate, and, where necessary, restore the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration, and primitive recreation. To that end, (a) Natural ecological succession will be allowed to operate freely to the extent feasible. (b) Wilderness will be made available for human use to the optimum extent consistent with the maintenance of primitive conditions. (c) In resolving conflicts in resource use, wilderness values will be dominant to the extent not limited by the Wilderness Act, subsequent establishing legislation, or these regulations." (36 CFR 293.2)

"The manager, then, must face the paradox of wilderness as described by the Congress, as seen or felt by those whose values vary, and the uses and activities permitted and prohibited in those areas by the Wilderness Act. He must solve the problem of use of the area while still keeping these parts of the natural world intact. Management of land as wilderness must be to ensure that, in every case, wilderness values are dominant, above compromise, and enduring. Management practices must be consistent over time and space, legally and administratively unimpeachable, and totally within the concept and philosophy of the intent of retaining an enduring resource of wilderness unimpaired for present and future use and enjoyment as wilderness."



1. Maintain an enduring system of high-quality wilderness;

2. Perpetuate the wilderness resource;

3. Provide, to the extent consistent with items 1 and 2, opportunities for public use, enjoyment, and understanding of wildernesses, and the unique experiences dependent upon a wilderness setting;

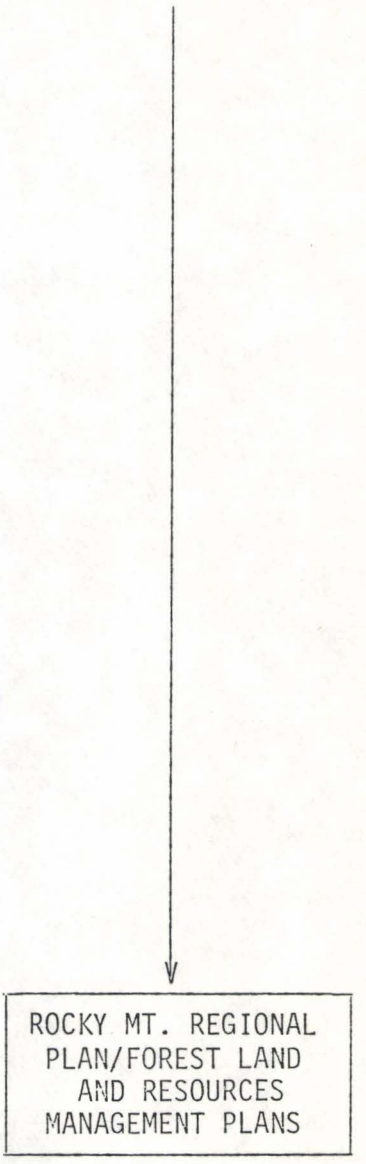
4. Maintain plants and animals indigenous to the area;

5. Accommodate and administer those uses or activities which are of the type generally prohibited by the Wilderness Act, but which are specifically excepted by that Act, or subsequent establishing legislation, in such manner as to minimize their impact on the wilderness resource and values;

6. Maintain stable watersheds within constraints of the Wilderness Act;

7. Consider protection needs for populations of threatened and endangered species and their habitats in management of wilderness."

Presently in developmental stages, so this direction is considered interim management direction.



This direction was developed to provide specific management direction and actions for the MBSW to insure wilderness-related benefits to current and future generations. Within this broad planning goal, the planning objectives were to:

1. *Develop interim management direction consistent with regulations guiding land and resource management planning. See Section IV for an overview of the planning process.*

2. *Consider all wilderness-related demands and values.*

3. *Specify clear, quantitative, and evaluative management goals, objectives, and actions.*

4. *Develop levels of acceptable impact standards.*

5. *Consider only those management actions which are necessary.*

6. *Consider areas contiguous to the MBSW in order to complement the wilderness resource and its uses.*

7. *Provide a variety of wilderness use opportunities that are appropriate within the MBSW.*

8. *Provide as much freedom of choice for MBSW users as is possible under existing Forest Service Policy. Give special attention to optimizing freedom of choice for recreation users.*

III. COMPONENTS OF WILDERNESS

The three basic components of the MBSW considered in developing this direction are biophysical, social, and managerial. Each component has several elements. The biophysical elements combine to form the wilderness resource. Through management these resources provide the social benefits specified in the Wilderness Act (see Figure 2).

Biophysical Component

Maintenance and preservation of the integrity of the biophysical elements interacting in a natural ecosystem is fundamental to wilderness management. The biophysical elements include vegetation, soil, wildlife, air, water, and landform.

Social Component

The social component is comprised of those people who influence either the quantity or quality of the wilderness resource. These social elements are classified as follows:

1. Wilderness Proponents. These people exert considerable influence through the political and public involvement processes to assure maintenance of the values they appreciate with wilderness preservation. Nationwide, they appear to be the largest group of wilderness advocates, though little is known about their absolute number or the extent and intensity of their vicarious appreciation.

2. On-Site Users. These users are classified as recreational, scientific, educational, or commercial users. These on-site users impact all three wilderness components.

3. Managers. The on-site presence of management personnel influences all three wilderness components.

4. Other. Other social elements influence the wilderness system. These include air traffic, air and water pollution, visual intrusions, noise and other disturbances from the surrounding area.

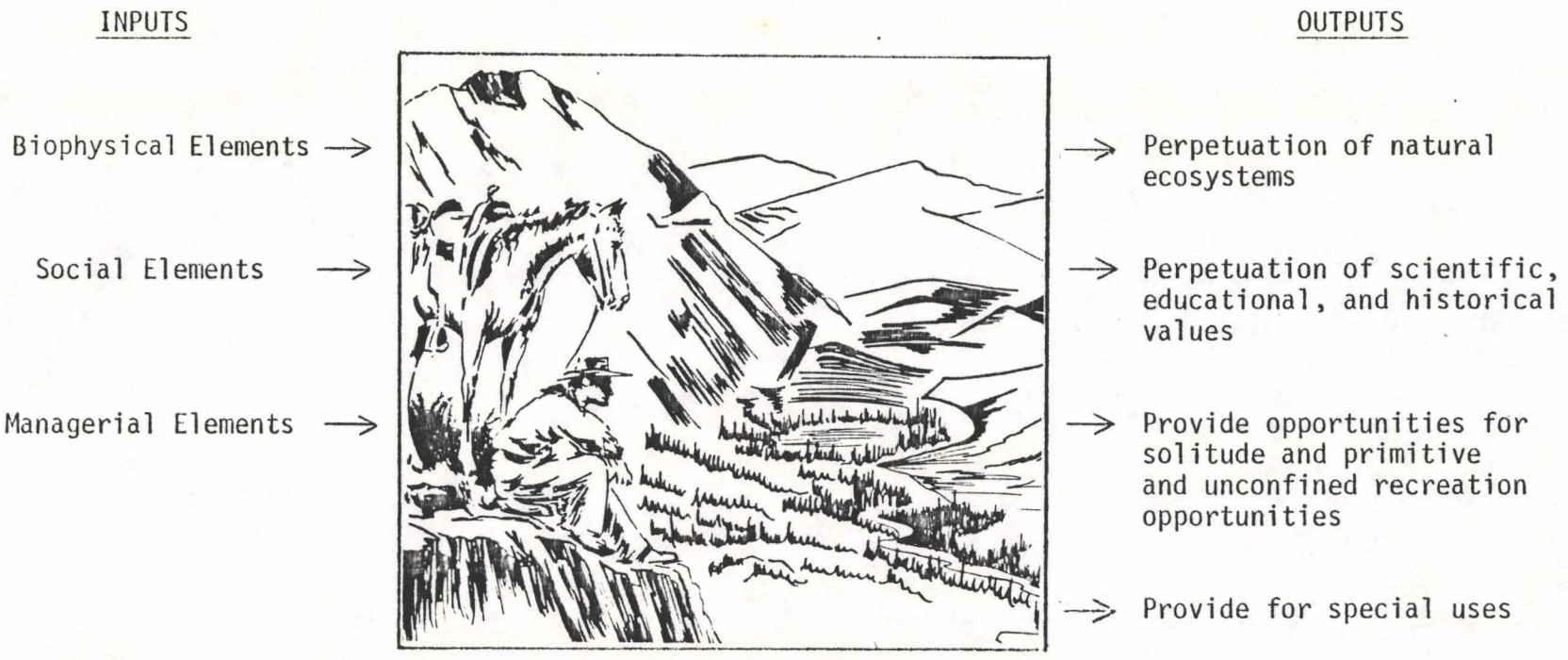


Figure 2. Wilderness Elements

Managerial Component

The managerial component includes the policies and management actions and their evidences in the MBSW. The actions range from policy directives to such specific actions as the presence of a wilderness ranger or a trail sign.

Integration of Components

Each component is important, recognizing that wilderness resources exist for the benefit of man. Without the biophysical component, there would be no wilderness. Without the social component there would be no wilderness benefits. And without the managerial component the quantity and quality of the wilderness resource and its uses would diminish and likely disappear over time.

The task is one of designing and following a wilderness management planning approach that adequately considers each component. Relationships between the various components of the wilderness management system must be understood and management actions must be recommended that balance the mix (quantity and quality) of these components to obtain the greatest flow of wilderness benefits over time.

IV. PLANNING APPROACH

Wilderness resource planning begins with broad wilderness management goals and ends with recommendations for specific management actions at the sub-area or site level. There is a hierarchy of wilderness management guidelines that range from general to specific. At the general level are "goals" derived from the policy established by the Wilderness Act of 1964, by the U.S. Department of Agriculture wilderness-related regulations, and by Forest Service Manual directives for wilderness management (see Appendix C).

Next in the hierarchy of management action are management "objectives" established to accomplish the policy. These objectives specify the desired outputs and level of acceptable impact.

Last in the hierarchy are specific management actions. These actions are taken to achieve the goals and objectives established for the MBSW.

Steps of the Planning Process

Wilderness management planning must follow a systematic process that is understandable to the public served. The planning process is shown in Figure 3 which represents the process for land and resource management planning called for in the Regulations issued for the 1976 National Forest Management Act (Rules and Regulations, Federal Register, Vol. 44, No. 81, September 17, 1979).

An overview of each step, along with referencing documentation, follows:

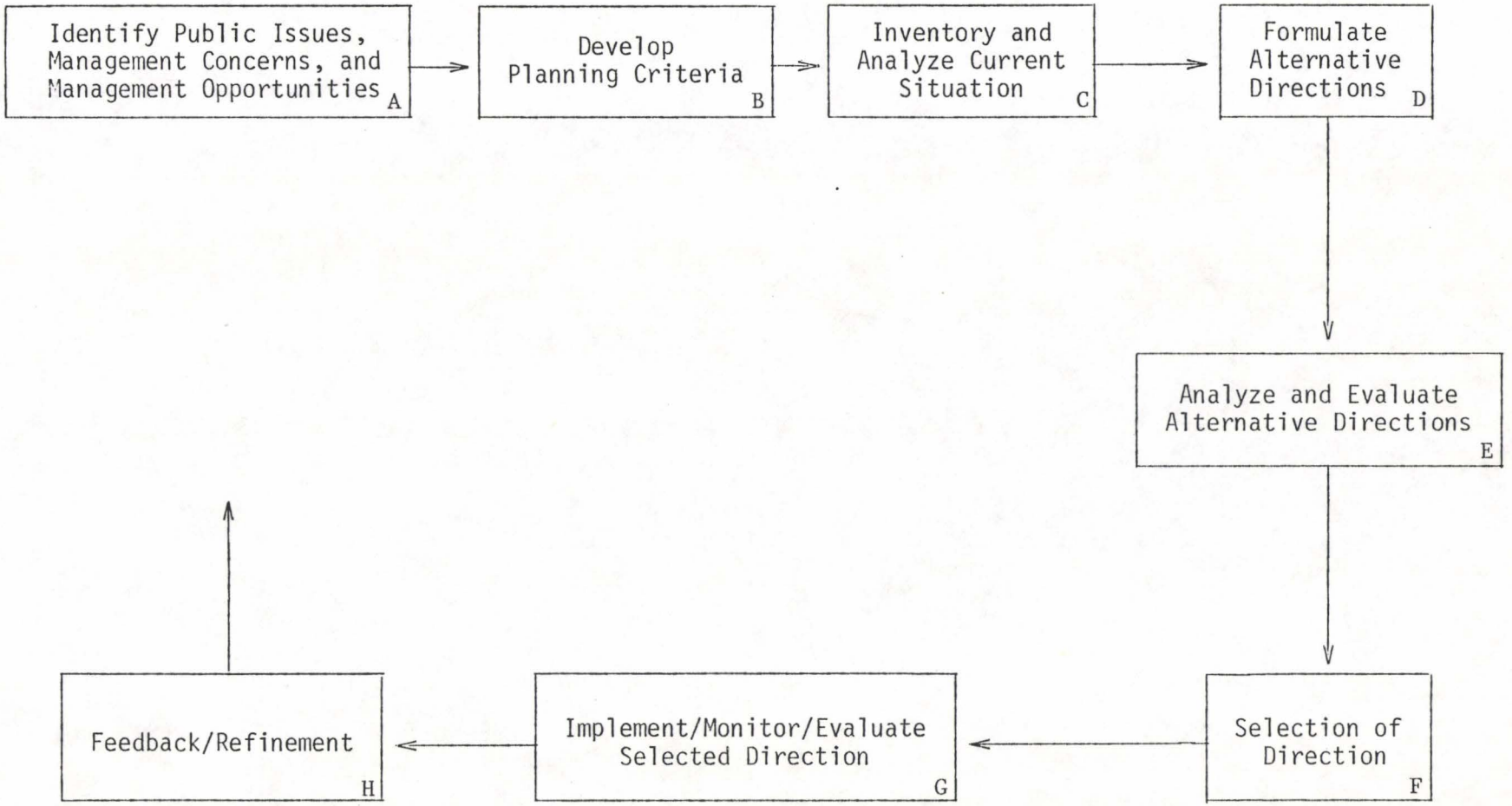


Figure 3. Planning Process

Step A. Public issues, management concerns, and management opportunities are the driving force of the planning process. The issues, concerns, and opportunities in this plan were identified by mail surveys, field contacts, and public meetings and are listed in the Environmental Assessment (Appendix A).

Step B. Planning criteria are those factors against which alternative management directions are evaluated to assess their attractiveness or desirability. The criteria enable effective consideration of the issues, concerns, and opportunities listed in the Environmental Assessment (Appendix A).

Step C. Planning and management decisions are a function of the existing resources and necessitate obtaining and maintaining a current inventory of these resources, including an assessment of demand for their use. The type and amount of inventory data to collect is a function of the issues, concerns, opportunities, and planning criteria and also should be consistent with the planned monitoring and evaluation processes. In this planning effort, inventory data were collected primarily through field contacts, mail surveys (Appendix D), the Recreation Opportunity Spectrum system (Appendix E), the wilderness travel simulator (Appendix O), campsite inventory (Management Unit Direciton), and resource analysis techniques. The future demand for recreational use of the planning area was based on a trend and demand analysis (Appendix F).

Step D. Based upon information from three previous planning steps, a reasonable range of alternative directions is developed to provide alternative levels and mixes of wilderness-related benefits. In this plan, five alternative directions were developed and are discussed in the Environmental Assessment (Appendix A).

Step E. Evaluation of alternatives involves assessing the relative physical, biological, economic, and social effects and relates to the predetermined planning criteria. See the Environmental Assessment for the evaluation of alternatives and effects of implementation (Appendix A).

Step F. After analyzing and evaluating the alternative directions, management selects a preferred direction. See the Environmental Assessment for preferred alternative (Appendix A).

Step G. Implementation and monitoring are continuous activities. At specified intervals during the implementation and monitoring stage the direction is evaluated. Section V of the MBSW Interim Direction specifies the implementation, monitoring, and evaluation activities.

Step H. Feedback into the planning process might suggest new issues, concerns, and better ways to deal with existing and developing situations. Feedback is assessed to determine if all or parts of the implemented direction and related action are accomplishing the desired results. If not, refinements must be made to accomplish the goal and objectives.

Management Concepts

Three management concepts were used to structure and facilitate the analyses during the planning process. These concepts were Management by Objectives, Management Area Stratification, and Levels of Acceptable Impact. Each is described below.

Management by Objectives

Management objectives are guided by policy and are written to accomplish the goals of those policies. Objectives indicate what is to be done, when, where, by whom, and with what expected outcome. Using clear statements of objectives, explicit management actions can be written.

Ideally, the degree to which management objectives are attained is determined by quantifiable management standards. Generally, a standard is expressed as part of a management objective statement. Management standards used in the MBSW direction were developed using the best information available. At times that information was quite limited and prevented writing of clear management objectives. In those cases, broader subgoals, rather than objectives, were set.

Management Area Stratification

Some management directions developed for the MBSW apply wilderness-wide and some to sub-areas. Three types of area stratification are recognized in the plan: (a) area-wide, (b) wilderness opportunity area, and (c) management unit. Capability area and site specific direction (two other types of area stratification) have been integrated into the area-wide, wilderness opportunity area, and management unit direction.

Area-wide. These directions cover the entire MBSW which includes designated wilderness and land recommended (RARE II) for wilderness designation (see Figure 4).

Wilderness Opportunity Areas. Through analyses of the public issues, management concerns, demand trends, supply conditions, and use of the Recreation Opportunity Spectrum (ROS), four sets of management actions were developed to describe four different wilderness opportunities. Each of the four sets of management actions address the issues and concerns and specifies an alternative management strategy and set of outcomes. Each of the four strategies meets the planning criteria and together offer a range of wilderness opportunities. By adapting the Recreation Opportunity Spectrum to wilderness management planning, it was possible to map the boundaries of these four Wilderness Opportunity Areas (see Figure A-2 in Appendix A or individual management unit maps for areas).

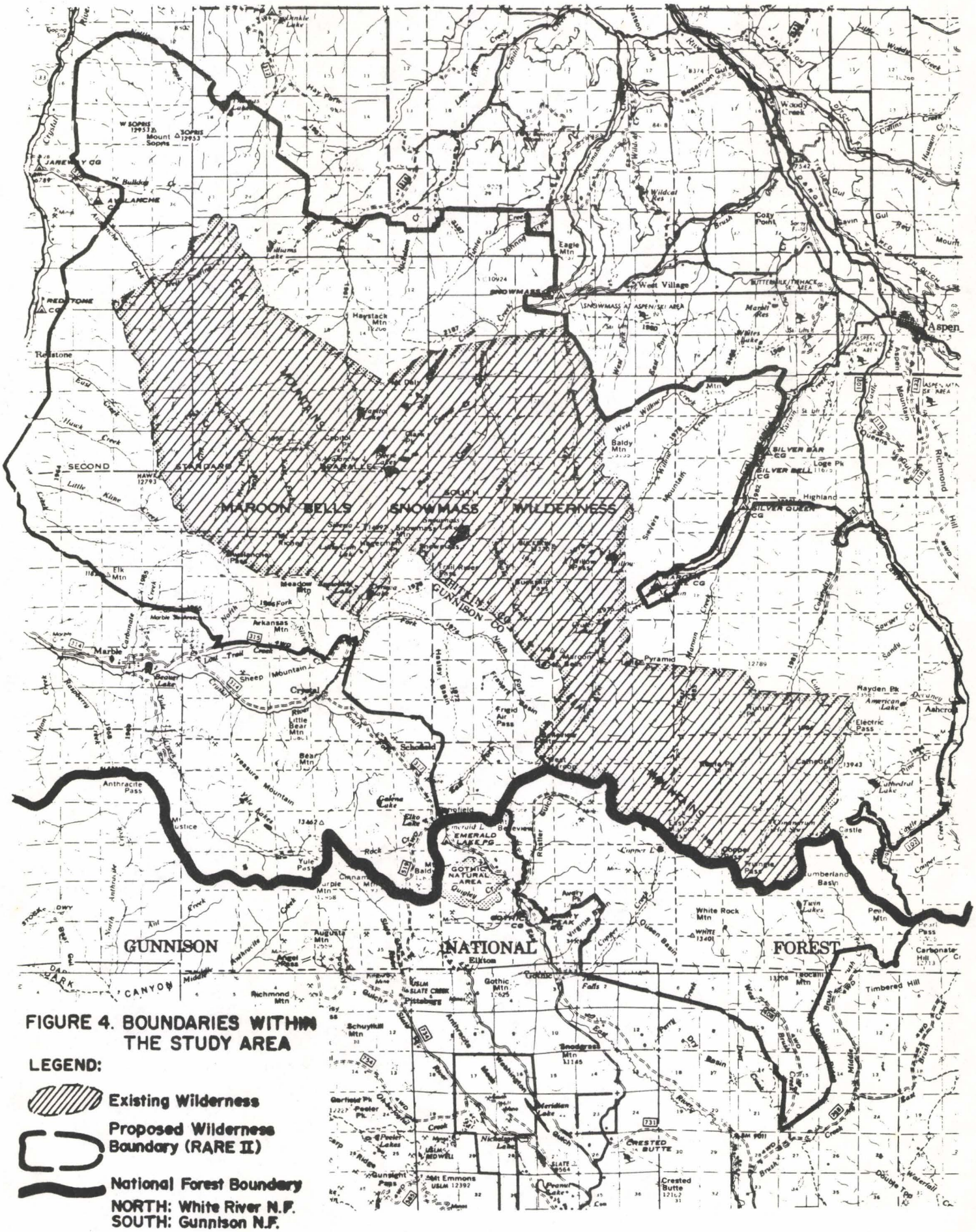


FIGURE 4. BOUNDARIES WITHIN THE STUDY AREA

LEGEND:

- Existing Wilderness
- Proposed Wilderness Boundary (RARE II)
- National Forest Boundary

NORTH: White River N.F.
SOUTH: Gunnison N.F.

The four wilderness opportunity areas are called transition, semi-primitive, primitive, and pristine and reflect a wilderness opportunity spectrum. These four are related to the two Recreation Opportunity Spectrum classes (Primitive and Semi-primitive non-motorized) in Figure 5. Each area reflects differences in permitted uses, levels of use, development, and acceptable change. Figure 6 shows a partial and generalized list of conditions and actions for each wilderness opportunity area.

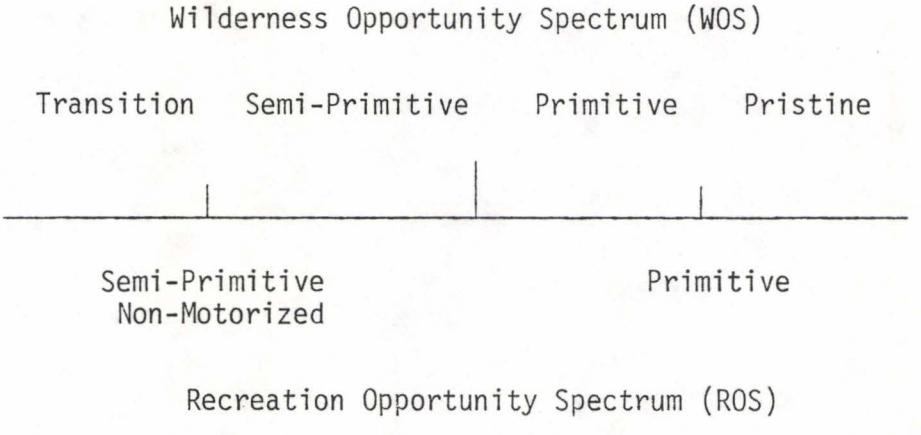


Figure 5. Relationship between Recreation Opportunity Spectrum and Wilderness Opportunity Spectrum.

While one or more of the four might be used in a management unit, a transition area is designated for major trailhead areas, where concentration of users is high and evidence of past use is readily apparent. A semi-primitive area is established for trail corridors, trailhead areas, and popular destination areas where concentration of users is moderate to high and evidence of past use is still apparent. A primitive area is established for the more remote, lightly used trails and areas where concentration of users is low to moderate and evidence of past use is not apparent. A pristine area is established for the most remote areas where few trails exist, concentration of users is very low, and evidence of past use is not apparent.

Management Units. Logistically, management of land can best be achieved if the area is divided into management units for the scheduling of labor and capital. Therefore, the MBSW was zoned into 19 management units. The criteria for delineating these areas were topography (watersheds), administrative feasibility, specific issues and concerns, and administrative boundaries of ranger districts or forests. The 19 management units are shown in Figure 7. More than one wilderness opportunity area might be found within a management unit.

Transition	Semi-Primitive	Primitive	Pristine
Low levels of solitude; many party encounters	Moderate levels of solitude; some party encounters	High levels of solitude; few party encounters	Highest levels of solitude; very few party encounters
Low emphasis on opportunities for challenge, risk, and self-reliance	Moderate emphasis on opportunities for challenge, risk, and self-reliance	High emphasis on opportunities for challenge, risk, and self-reliance	High emphasis on opportunities for challenge, risk, and self-reliance
Restrict sheep or cattle grazing; transient horse use only (see Appendix V, #1)	Provide for stock use	Provide for stock use	Provide for stock grazing to the degree that past use is not obvious to recreation users
Opportunities to view small mammals; very few large mammals	Opportunities to view small mammals; few large mammals	Opportunities to view small mammals; some large mammals	Opportunities to view both small and large mammals
High level of on-site public safety (low level of woodsmanship skills is assumed of visitor)	Moderate level of on-site public safety	Low level of on-site public safety	Low level of on-site public safety (high level of woodsmanship skills is assumed of visitor)
High degree of public information	High degree of public information	Low degree of public information	Very low degree of public information
High degree of ranger/public contact	Moderate degree of ranger/public contact	Low degree of ranger/public contact	Very little or no ranger/public contact
Provide transportation, information, and sanitary facilities to protect wilderness resources	Provide transportation, information, and sanitary facilities to protect wilderness resources	Provide only for a trail system	Provide no facilities

Figure 6. Generalized example of conditions and actions for each wilderness opportunity area.

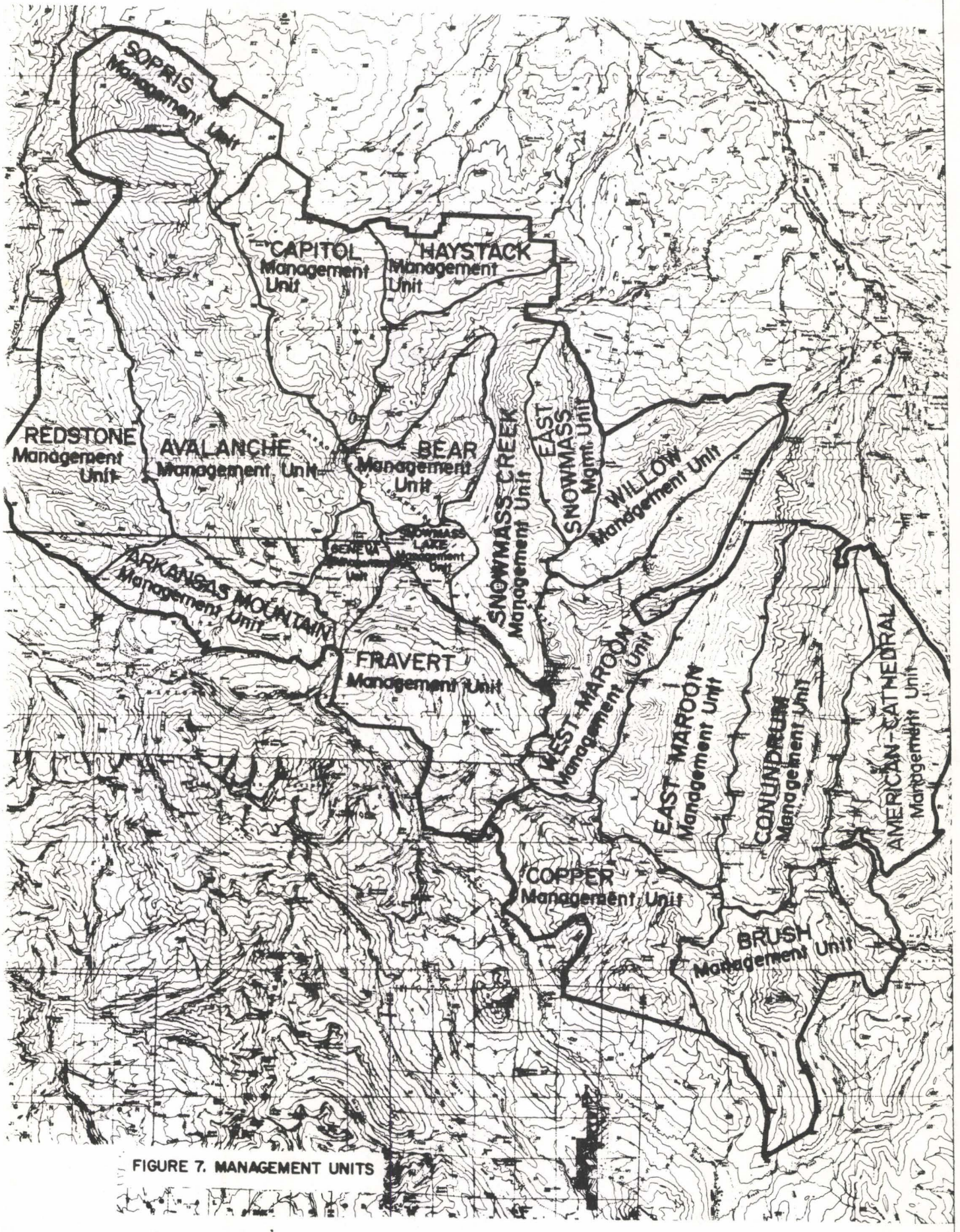


FIGURE 7. MANAGEMENT UNITS

Levels of Acceptable Impact

Levels of acceptable impact define the levels at which impacts are acceptable and unacceptable. The level of acceptable impact concept does not mean that management is necessary only when unacceptable conditions exist. Management is also needed when conditions are acceptable to keep them from deteriorating or becoming unacceptable.

To establish levels of acceptable impacts for the management direction, it was necessary to define standards or a desirable level of attainment. To establish guidelines for these tolerance limits, the concept of Levels of Acceptable Impact (LAI) was used (slightly modified from Interim Management Directions for Shoshone National Forest Wildernesses and Primitive Area).

Two basic types of impacts are considered in the following two categories: biophysical and social.

1. Level of Acceptable Biophysical Impact. Wilderness management is directed toward maintaining the biophysical component of the wilderness system. While some biophysical impact must be permitted to realize wilderness benefits, there is a point at which ecological change becomes unacceptable. Those levels of impact need to be identified for the different biophysical elements and standards set. When possible, specific levels and standards for the MBSW are discussed in Section V of the MBSW Interim Direction. Figure 8 is a generalized example of the level of acceptable biophysical impact concept.

2. Level of Acceptable Social Impact (Use Activities). Limitations are needed on types and amounts of on-site activities to preserve opportunities for wilderness benefits. Standards need to be set to accomplish this purpose when possible. The level of acceptable social impact is dependent on the type of wilderness opportunities to be provided and the effect of users on the desired opportunities. When possible, standards were established to facilitate a high quality on-site wilderness experience and are discussed in Section V of the MBSW Interim Direction. Figure 9 is a general example of the level of acceptable social impact concept.

Planning Tools Used

Different tools and techniques were used at each stage of the planning process. Table 1 identifies the primary planning tools and techniques and the stages of the planning process at which they were used.

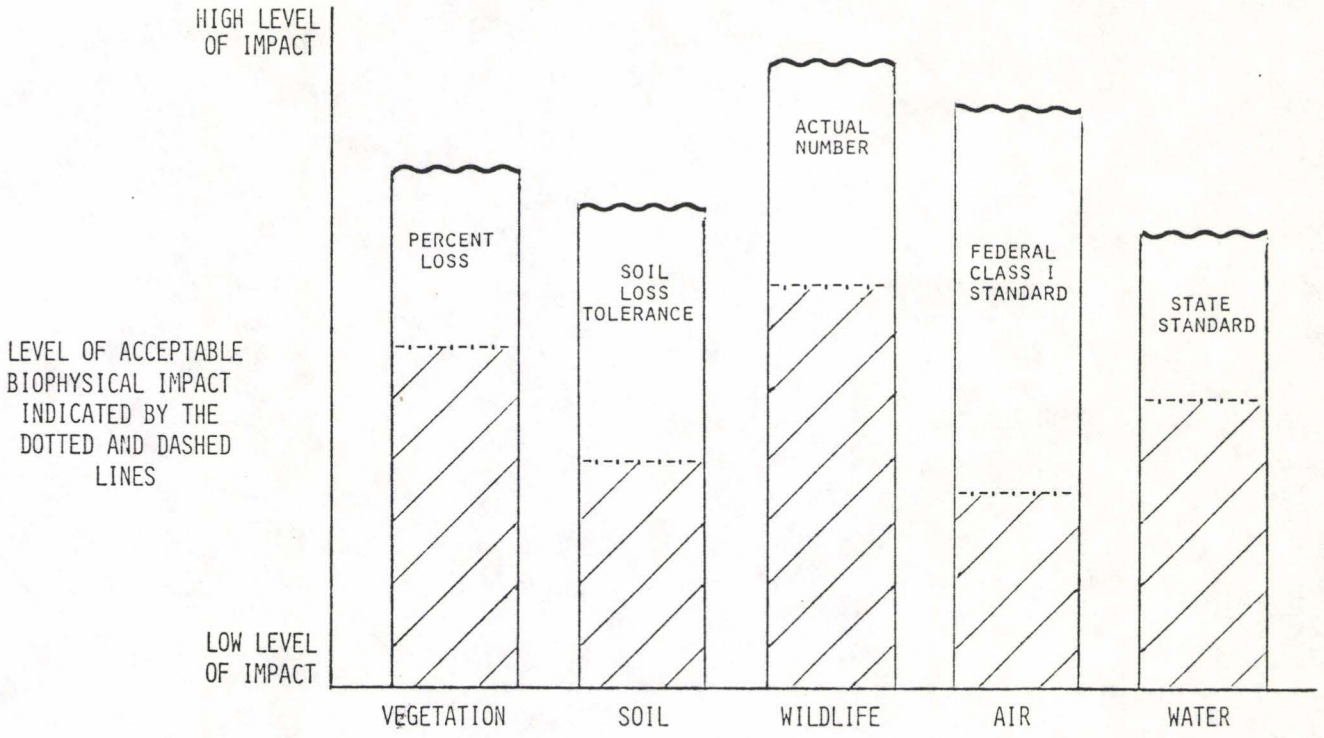


FIGURE 8. GENERAL EXAMPLE OF THE LEVEL OF ACCEPTABLE BIOPHYSICAL IMPACT.

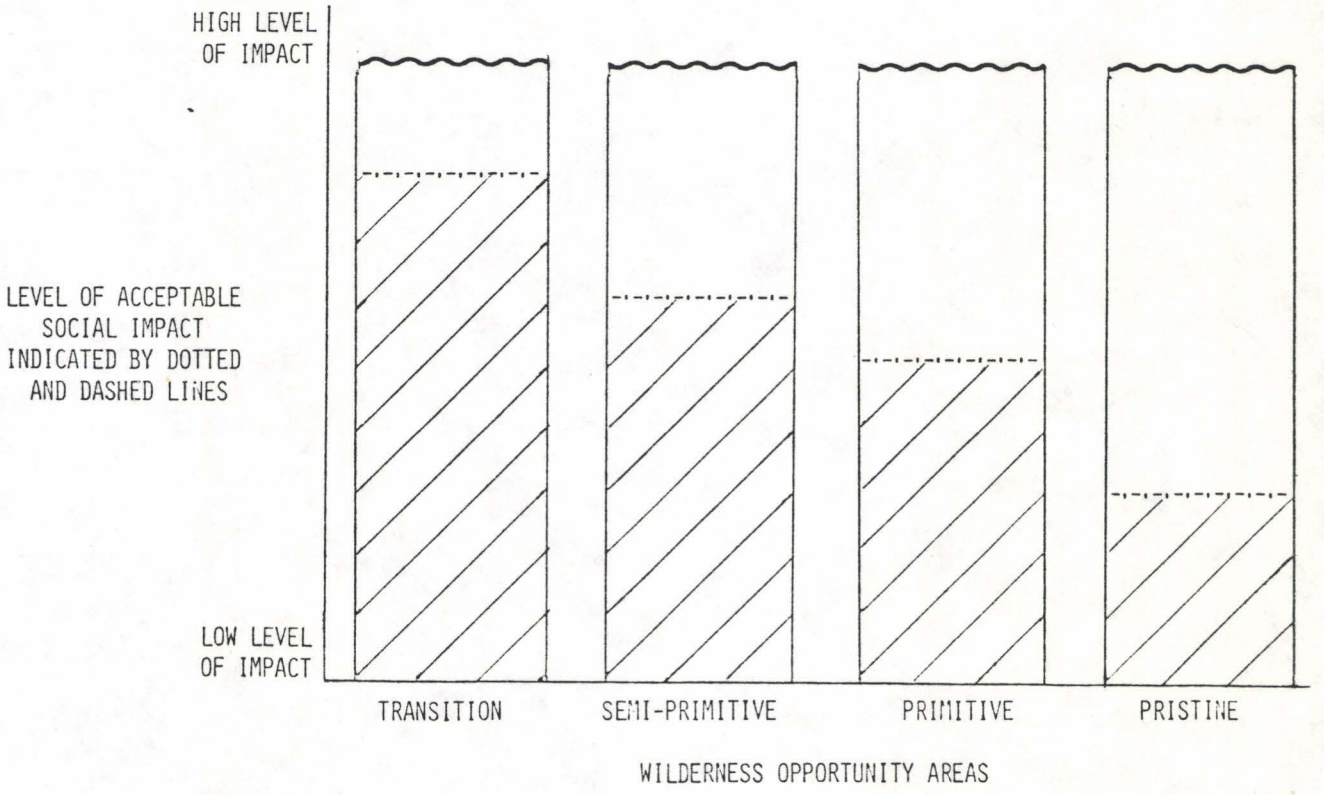


FIGURE 9. GENERAL EXAMPLE OF LEVELS OF ACCEPTABLE SOCIAL IMPACT (USE ACTIVITIES).

Table 1. Planning tools and techniques used in planning stages depicted in Figure 3.

Planning Tools and Techniques	Planning Process Stages							
	Issues and Concerns	Criteria	Inventory	Alternatives	Evaluation	Selection	Implement/Monitor	Refinement
1) Professional judgement	X	X	X	X	X	X	X	X
2) USFS public involvement	X	X	X		X		X	X
3) CSU interviews, questionnaires, and participant observation	X		X	X	X		X	X
4) Existing administrative records			X				X	
5) Road and trail counter/trail registration cards			X				X	
6) Campsite inventory	X		X				X	
7) Wilderness travel simulator			X		X		X	
8) Recreation Opportunity Spectrum System			X	X	X		X	
9) Local enforcement and rescue groups	X		X				X	
10) Resource maps			X				X	
11) Resource impact analysis	X		X				X	
12) Air/water quality analysis			X				X	
13) State Division of Wildlife	X		X				X	X
14) NFDRS Component Analysis			X				X	
15) Seasonal wilderness ranger	X		X				X	X
16) Management by objectives				X	X		X	
17) Levels of acceptable impacts			X	X	X		X	X
18) Wilderness opportunity zone			X	X	X		X	X

V. MBSW MANAGEMENT DIRECTION

This section details the management direction for the MBSW. It is divided into two sections entitled Management Prescriptions and Management Unit Direction. There are five management prescriptions:

Area-Wide Prescriptions #1 (yellow pages)
Transition Opportunity Area Prescriptions #2 (ivory paper)
Semi-Primitive Opportunity Area Prescriptions #3 (blue paper)
Primitive Opportunity Area Prescriptions #4 (buff paper)
Pristine Opportunity Area Prescriptions #5 (green paper)

Figure 10 depicts the structure of the MBSW management direction. Every acre of the MBSW is managed by a three-level hierarchy of direction which builds upon the Wilderness Act of 1964 and Department of Agriculture and Forest Service policy guidelines (see Appendix C). The first level of direction is the area-wide prescription (#1) which applies to the entire MBSW. The second level of direction is one of the four wilderness opportunity area prescriptions (#2, #3, #4, or #5). Every acre receives management direction from one of the four wilderness opportunity area prescriptions. The third level of direction is the management unit direction which specifies those prescriptions and unit-specific actions for each of the 19 management units (Figure 7).

Management Prescriptions

This section describes the five wilderness management prescriptions. Those prescriptions start with broad goals and become quite specific in the form of management actions. When sufficient information was available, clear management objectives were set. Otherwise, less specific statements, or sub-goals, were written to reflect the need for better information and/or for greater specificity about how the issue, concern, or opportunity addressed could best be handled. Therefore, even though this management direction is based on the best technology available, it makes no claim to perfect-complete information.

Under the area-wide prescriptions, 20 different "elements" of wilderness management are identified and numbered, such as 1. soils, 2. water, 3. air, 7. fire, 10. recreation, and 14. dogs. Because the area-wide prescriptions are sufficient for some of these elements, they are not repeated for one or more of the opportunity area prescriptions. However, the numbering system for the elements that is used in the area-wide prescriptions is retained. This accounts for missing element numbers when area-wide prescriptions are sufficient for opportunity areas.

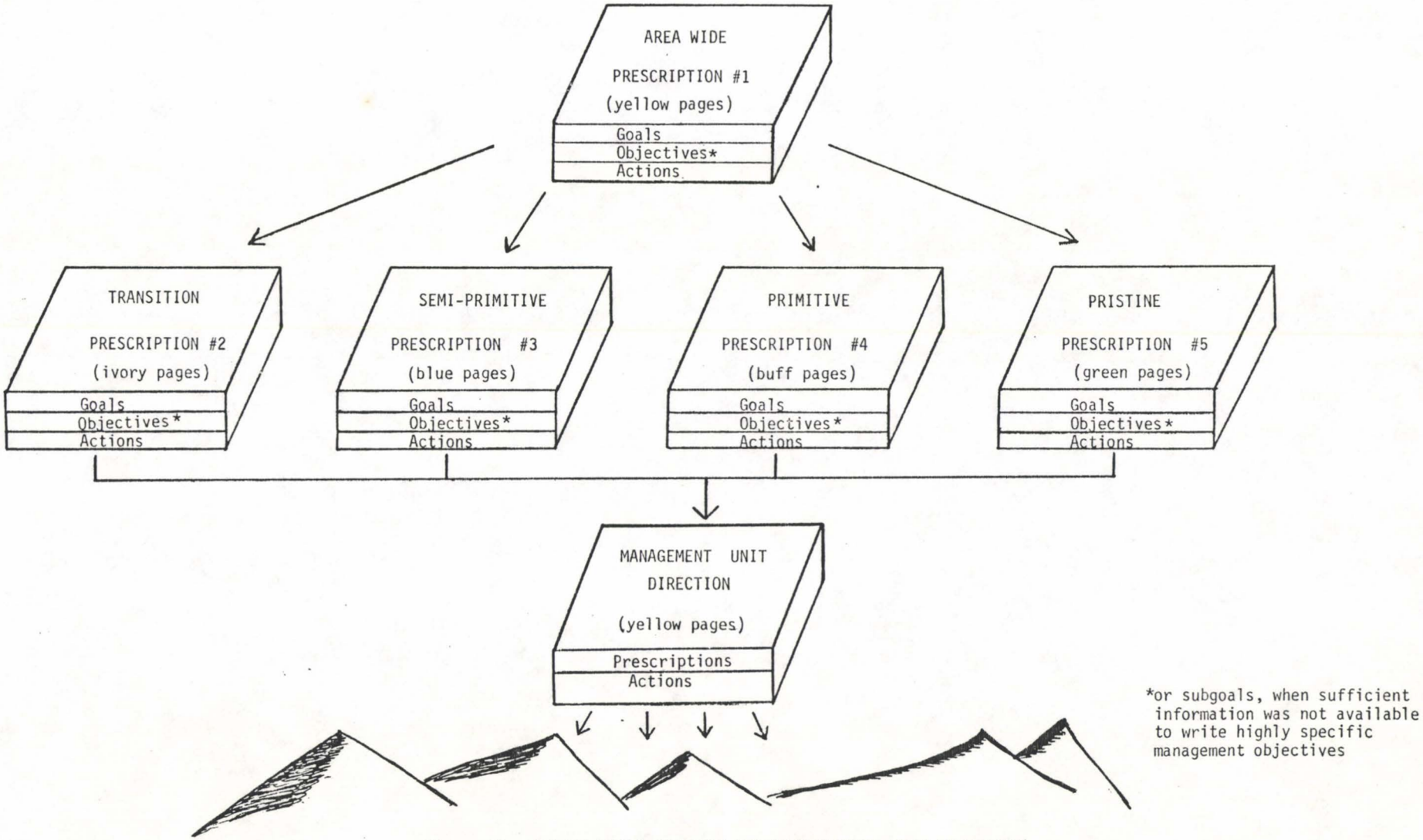


Figure 10. MAROON BELLS-SNOWMASS WILDERNESS MANAGEMENT DIRECTION

MANAGEMENT PRESCRIPTION #1: AREA-WIDE

Where it Applies: This prescription applies to the entire MBSW (wilderness and recommended RARE II lands--see Figure 4.

Goals:

1) Provide protection of current wilderness resource values to prevent degradation of the biophysical and social resource.

2) Provide uniformity, coordination, and efficiency in management direction implementation among the Aspen, Sopris, and Taylor River Ranger Districts.

3) Provide simplicity in carrying out monitoring actions.

4) Establish levels of acceptable impacts for the biophysical and social elements.

5) Rehabilitate biophysical and social elements in locations where these elements have been degraded below the level of acceptable impacts.

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
1. Soils	1. Maintain soil resource within the soil loss tolerance range (T values).	1a. Develop a system to determine soil loss tolerance (T values) standards.	1982
		b. Determine "T" values by soil type in human use areas. Priority given to the high human use areas of the seven indicator management units--Snowmass Lake, West Maroon, Conundrum, Capitol, Bear Creek, Geneva, and Avalanche (80% of human use occurs in these units).	1984
		c. Rehabilitate soil disturbances caused by human activities (e.g., mining, recreation, grazing) to the natural ecological stage of adjacent land on case by case basis.	As Necessary
		d. See also trail maintenance levels in Transportation Element and campsite condition rating class in Recreation Element in Prescriptions.	
2. Water	1. Maintain existing water quality or Colorado State water quality standards, whichever is greater. A two-year downward trend in water quality standards necessitates appropriate mitigating action.	1a. Establish water quality baseline monitoring sites in the seven indicator management units and where potential threats (e.g., mining or streamside grazing areas) to water quality exist.	12/80
		b. Collect bacteriological, biological, chemical, and physical water quality data (see Appendix N for existing water quality data).	Annually
		c. Modify or eliminate human activities resulting in unacceptable water quality levels. Establish appropriate time period and methods to achieve acceptable water quality levels consistent with type, degree, and magnitude of degradation. Unacceptable water quality levels will be corrected within two years of the discovery.	On-going
3. Air	1. Maintain Class I Air Quality standards and baseline visual clarity.	1a. Establish air quality baseline monitoring sites at Electric Pass, Capitol Peak, Trailrider Pass, and Buckskin Pass (see management unit direction for site location).	9/80
		b. Take photos and use Kodak color separation guide between July 1 - September 15 (see Visibility monitoring guidelines in Appendix Q).	8/80 & Annually
		c. Inform public of low-smoke campfire technique and no-fire camping techniques (see Public Information/ Education Element in Prescriptions).	On-going
		d. Develop field monitoring criteria and procedures to determine when unacceptable air quality standards attributed to campfire smoke necessitate implementing CFR order to close areas to campfires.	9/80
		e. Review planned projects outside of wilderness which might impact air quality standards and inform local, state, and federal officials and proponent.	On-going
		f. Cooperate with National Atmospheric Deposition Program (Jim Gibson-CSU-National Coordinator) and utilize synoptic atmospheric measurement for acid rain monitoring.	On-going

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
4. Fish and Wildlife	1. Maintain existing quantity and quality of fish and wildlife habitat. Favor those species dependent on wilderness resources in the Southern Rocky Mountain area if conflict occurs.	1a. Cooperate with CDOW to identify critical habitat areas and current population estimates for all large game and significant non-game indigenous species.	9/82
		b. Cooperate with CDOW in monitoring bighorn sheep (quality indicator species) with regard to their numbers, distribution, and forage availability. Wilderness rangers maintain records.	On-going
		c. Continue present fish stocking program (see Appendix H).	On-going
		d. Wilderness rangers maintain records documenting human harassment of wildlife incidents.	On-going
		e. See also Vegetation Element in Prescription #1.	As Necessary
	2. Protect and maintain threatened and endangered species.	2. Develop and implement necessary protective actions for threatened and endangered species on case by case basis.	
5. Vegetation	1. Maintain plant associations in late-seral status and do not exceed forage utilization standards (see Appendix K for Capability areas).	1a. Determine condition class and percent forage utilization for active range allotments and large game critical habitat areas.	9/81 & Annually
	2. Protect and maintain threatened and endangered species.	b. Use campsite condition rating class in conjunction with Code-A-Site to assess vegetation impacts at campsites (see Recreation Element in Prescriptions and Appendices I and S).	9/81 & Annually
		c. Wilderness rangers maintain records documenting the cutting or carving of live vegetation.	On-going
		d. Rehabilitate vegetation impacts caused by human activities on a case by case basis.	As Necessary
		2. Develop and implement necessary protective action for threatened and endangered species on case by case basis.	As Necessary
6. Minerals	1. Provide for mineral activities prescribed by 1872 U.S. Mining Law, the Mineral Leasing Laws, and subsequent regulations.	1a. Prepare environmental assessment for proposed mineral activities.	As Necessary
	2. Provide for mineral activities within the level of acceptable biophysical and social element impacts.	b. Review and act upon operating plans within 30 calendar days of receipt pursuant to 36 CFR 252.	As Necessary
		2a. Field check mining activities at least twice each calendar year.	Annually
		b. Wilderness rangers document biophysical and social impacts based on field observation and conversations with visitors and report these impacts promptly to District Ranger.	On-going

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
7. Fire	1a. Allow natural fires to assist in the pertuation of the wilderness ecosystems within specified prescriptions (see Fire Management Plan in Appendix J).	1a. Implement fire management prescriptions in Appendix J.	As Necessary
	b. Confine, contain, control, and suppress all man-caused fires using tactics and equipment which have minimal impacts on biophysical and social elements.	b. District Ranger advises Fire Boss or Fire Behavior Officer of significant biophysical and social elements in the burn area vicinity that might suggest appropriate tactics and equipment.	As Necessary
	2. Educate the public concerning natural and man-caused fires.	c. Rehabilitation team inspects burned-over area and suggests rehabilitation measures deemed necessary.	As Necessary
		2. Public information and education program (see I & E Element in Prescriptions): - explains role of natural fires in perpetuating ecosystems - encourages use of stoves - instructs in proper campfire techniques	
8. Insects and Disease	1a. Allow I & D activity common to area to assist in the perpetuation of wilderness ecosystem.	1a. Monitor I & D activity areas by aerial photos.	Annually
	b. Control I & D activity which threatens the health and safety of humans or livestock, inside or outside the area. Use mitigating actions and equipment that minimize impacts on biophysical and social elements.	b. Document (in the annual wilderness coordinator's report) the current I & D activity areas and apparent trends.	Annually (fall)
		c. Inform public of I & D activities which are a threat and the mitigating actions being taken (see Public I & E Element in Prescriptions).	As Necessary
9. Administration	1. Provide for consistent, coordinated, and efficient wilderness activities among the three Ranger Districts, two Forests, other cooperating governmental agencies, and private sector.	1a. Hire one permanent full-time wilderness coordinator on the Aspen Ranger District to oversee implementation and monitoring of management direction for the entire MBSW.	6/81
	2. Provide training and effectively utilize seasonal personnel (e.g., wilderness rangers, volunteers, and student interns).	b. Conduct a coordination meeting among Districts and Forest, and subsequently prepare annual operating plan to at least include tasks (including monitoring activities), methods, responsibilities, target dates, and seasonal's field schedules.	Annually (early spring)
	3. Focus administrative activities (e.g., wilderness rangers, information dissemination) outside the wilderness, at the entry points, and at popular destination areas inside the area.	c. Conduct a coordination meeting with CDOW, RMBL, Outward Bound, Gunnison and Pitkin counties, local media, local merchants, commercial outfitters, and other interested groups and individuals.	Annually (late spring)
	4. Gain user cooperation and compliance with management direction (see Public I & E Element in Prescriptions).	d. Also see Monitoring/Evaluation Element in Prescription #1.	
		2a. Hire 10 wilderness rangers, 3 wilderness information specialists (W.I.S.); utilize volunteers and student interns when available.	6/81 & Annually
		b. Conduct a wilderness training session involving District personnel, wilderness rangers, W.I.S., volunteers and student interns.	Annually (late spring)
		c. Prepare orientation/ethics/management booklets for wilderness training sessions.	6/81
		d. Wilderness rangers and W.I.S. receive Level 2 law enforcement training.	Annually (June)

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
9. Administration - continued		e. Structure field schedules so that each wilderness ranger and W.I.S. (also volunteers and interns when available) has an area of responsibility (e.g., three adjacent management units) during his/her employment in order to facilitate the person becoming a "resident expert" in the area in terms of assessing localized issues, trends, type and amount of use, travel patterns, and in recommending future management actions.	Annually (early spring)
		f. Develop a data recording form and instructions based on planned annual monitoring activities (see Wilderness Ranger Reporting in Appendix G).	Annually (early spring)
		g. Seasonal personnel submit written report prior to their departure which summarizes their monitoring data and significant perceptions, opinions, and recommendations concerning the MBSW and its users. Two or three days office time might be necessary. Volunteers and interns requested to produce similar reports.	On-going
		h. Conduct monthly "rap" session with seasonal personnel and a final debriefing "rap" session for purposes similar to action 2G (see Wilderness Ranger Reporting in Appendix G).	Monthly
		3a. Acquire and maintain radios for wilderness rangers.	1982
		b. Build and maintain (Level 2 maintenance) registration boxes and bulletin boards as directed in opportunity prescriptions.	9/81
		c. Have available self-issuing voluntary wilderness permits (signee retains copy) and pencils 100 percent of the time. Wilderness rangers check registration boxes relative to amount of trailhead use.	On-going
		d. Wilderness rangers contact parties and keep records of number of parties not filling out or retaining copy of permit. Request future compliance of those parties (see Wilderness Opportunity area Prescriptions for frequency of contacts).	On-going
		e. Use permits, compliance rates and the "wild" computer system as input to RIM report at Level 3 RIM reliability.	Annually (fall)
		f. Assess need for mandatory permit system. Decision criteria include but not limited to: - a downward trend in biophysical elements. - a volunteer permit system does not meet Level 3 RI reliability - camp or trail encounters per typical peak season day average 20 percent higher than 1978 in two of the seven indicator management units--Snowmass Lake, West Maroon, Conundrum, Capitol, Bear Creek, Geneva, and Avalanche (see Wilderness Simulator data in Appendix O).	1983

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
9. Administration - continued		- a 30 percent increase per year in notices of violation. - when three of the seven indicator management units are exceeding 50 percent of their camping groups at one time (GAOT) capacity for 20 or more nights between July 1 and Labor Day (see Management Unit Direction and Camping Capacities in Appendix P). 4. Motorized use is governed by 36 CFR 261.16, FSM 2323.71a and FSM 2326. Areas where limited motorized use is currently permitted are listed in the Management Unit Direction beginning on page 44.	
10. Recreation	1. Maintain current transition, semi-primitive, primitive, and pristine wilderness opportunities consistent with level of acceptable biophysical and social impacts. 2. Allow camping in heavily used areas only at designated sites according to specific Management Unit Directions, such as for Avalanche, Copper, Crater, Geneva, and Snowmass Lakes and for Conundrum Hot Springs. 3. Allow no open campfires within 1/4 mile of high-use lakes, alpine areas, and krummholz areas as identified in the Management Unit Directions. Allow stoves only. 4. Maintain all campsites to size and condition class standards described in Appendix S (see Appendix V, #6).	1a. Use capability area management recommendations in Appendix K to guide recreation management activities. b. Implement CFR order limiting party size to 10 people and 10 pack animals unless issued special use permit for larger party size by the Forest Supervisor. Large parties should be split into smaller subgroups of approximately 10 people and 10 pack animals per party while in transit. All groups larger than 10 people and 10 pack animals should camp in assigned group campsites (see Appendix V #2 and Appendix W). c. The Forest Supervisor will issue a forest supplement outlining policies for issuing commercial outfitter permits and delegating authorities to Districts for walk-in parties greater than 10 needing a permit per 10.1b above. d. Implement CFR order prohibiting camping within 100 ft. of lakes, ponds, streams, and trails. Exceptions are allowed only in the semi-primitive areas where campsites will be posted. Evaluation criteria to be used to evaluate exceptions are: 1. Lack of campsites in the immediate vicinity outside the 100 foot limit. 2. Need for camping in the immediate vicinity. 3. Carrying capacity of the area. 4. Impact on trail users and other nearby campers (see Appendix V, #3). e. Contact local FAA authorities and ask cooperation in informing local commercial and private pilots to maintain a 3,000-foot altitude above MBSW. 2. Review requirements for camping only in designated campsites at heavily used areas (by wilderness coordinator and appropriate District Ranger).	On-going 6/81 6/81 6/81 9/81 Annually

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
10. Recreation - continued		3a. Implement CFR order to close alpine and krummholz areas to open campfires.	6/81
		b. Eliminate firerings which violate campfire location criteria.	On-going
		c. Wilderness ranger shall monitor during summer use season.	On-going
		4a. Campsites monitored at least once every three years (6-7 management units per summer) using campsite condition rating system in conjunction with Code-A-Site (see Appendices I and S).	Annually
		b. Rehabilitate campsites which have a condition class of 4 or 5. Post "no" camping sign at site if deemed necessary for campsite condition improvement.	As Necessary
11. Transportation	1. Develop and maintain access to trailheads, trailhead areas, trails, and related facilities consistent with primary wilderness opportunity area the trail passes through.	1a. Maintain system trails to at least Level 1 (see Appendix R for maintenance levels).	Annually
		b. Maintain 50 percent of travelways to Level 1. Each travelway receives maintenance only for resource protection at least once every two years.	Annually
		c. Obliterate user created treads and travelways at their junction with system trails.	On-going
		d. Maintain trail condition log (wilderness rangers).	Annually
		e. Establish trail monitoring baseline sites in seven indicator management units--Snowmass Lake, West Maroon, Conundrum, Capitol, Bear Creek, Geneva, and Avalanche.	1982
		1. establish photo record 2. measure soil loss tolerance ("T" values) 3. measure dimensions of trail corridor 4. estimate types and amount of trail use	1982 and every 2nd year
		f. Assess need and feasibilty of relocating "through" trails away from destination areas and building a spur trail to serve destination area. Priority given to high recreation use areas--Snowmass Lake, Geneva Lake, Capitol Lake, Crater Lake, Avalanche Lake, Conundrum Hot Springs area, and Copper Lake.	1983
		g. Trail planning, construction, and maintenance will be accomplished according to FSH 7709.12 Chapters 320, 330, and 340 and FSM 2323.11C. Hiker-and-horse-use-trails are governed by the all-purpose-and-administrative-trails criteria (FSH 7709.12). Hiker-trails are governed by the special-purpose-trails criteria. All system trails are to be hiker-and-horse-use-trails unless specified otherwise in the Management Unit Direction beginning on page 44.	6/81

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
12. Public Safety	1a. Provide for public safety consistent with wilderness opportunity areas.	1. See Public Information and Education and other related Elements in Prescription.	
	b. Inform and educate users of potential hazards inherent in wilderness travel.	2a. Coordination meeting with Pitkin and Gunnison County Sheriffs and local search and rescue groups. Establish an information exchange network.	Annually (fall)
	c. Reduce frequency of accidents and injuries caused by lack of knowledge and understanding by 25 percent.	b. Develop Memoranda of Understanding with counties to define roles and actions.	6/81
	2. Provide efficient and coordinated search and rescue.	c. Train wilderness rangers to provide support in Search and Rescue activities.	Annually (late spring)
	3. Maintain accident and search and rescue reports.	3a. Summarize incidents in a report to include but not limited to: - type of incidents - frequency of incidents - locations - type of communications involved (e.g., radio, seasonal rangers, smoke, etc.) - manpower involved - number of hours between occurrence and exit from wilderness - type of SAR methods (e.g., walk, horse, helicopter) - cause of incident - estimated costs	As Necessary
		b. Review reports and consider appropriate actions, if any.	Annually
13. Public Information and Education	1. Provide information (via brochures, bulletin boards, personal contact) concerning MBSW and contiguous areas which is consistent with interim management direction to 75 percent of parties requesting it (see Recreation Survey Data in Appendix D).	1a. Disseminate existing information pertaining to wilderness ethics, safety, flora, and fauna which is appropriate to MBSW (e.g., USDA Program Aid - 1239 - Backpacking; USDA FS-319 - Keeping the "Wild" in Wilderness).	1/81
	2. Coordinate among Districts, seasonal personnel, local merchants, and media as to specific information to be provided.	b. Develop a brochure consistent with goals, objectives, and actions of interim management direction.	3/82
	3. Promote "Host" philosophy and activities among wilderness rangers, wilderness information specialists, volunteers, and interns.	c. Develop spot radio, television, and newspaper announcements for current information dissemination.	As Necessary
	4. Provide on-site information (signing) for purposes of resource protection and public safety consistent with wilderness opportunity areas (see Public I & E Element in Prescriptions 2, 3, 4, and 5).	d. Do not use wilderness opportunity area names in I & E program (transition, semi-primitive, primitive, pristine).	On-going
		e. Integrate MBSW-related information into Recreation Opportunity Guide.	On-going
		2a. Invite local merchants and media to portion of wilderness training meeting concerning public information and education.	Annually (June)
		b. Familiarize wilderness personnel with low impact recreation use and encourage contacting and informing users while in the wilderness (see Prescriptions for frequency of public contacts).	Annually (June)

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
13. Public Information and Education - Continued		3. Include "Host" philosophy and activities as part of annual wilderness training meeting to include but not be limited to: - how to talk with people - how to assist people - how to encourage compliance and low impact use - the rationale for wilderness rules, regulations, and low impact use techniques	Annually (June)
		4. When public is likely to encounter livestock on grazing allotments, post notice (including dates) at appropriate trailheads so those desiring can avoid likely encounters. Signs should be designed to standards set in FSM 7109.11-52.81.	As Necessary
14. Dogs	1. Allow dogs where compatible with biophysical and social elements. 2. Reduce dog harassment behavior that includes but not limited to disturbing livestock and wildlife, scaring people, barking, and defecation on trails or in lakes and streams (see Recreation Survey Data in Appendix D).	1. Implement CFR order that dogs, with the exception of working dogs and dogs used for legal hunting purposes, will be on a leash not to exceed 10 feet and attended by owner (see Appendix V, #8).	6/81
		2a. Public information and education addresses dog nuisance behavior and its consequences. Standard dog harassment posters (8½ X 11) displayed on each trailhead bulletin board.	6/81
		b. Wilderness personnel maintain a record of dog harassment incidents in their field data recording form. Record the type of incident, location, consequences of incident, time and date, and resulting action taken.	As Necessary
		c. Contact owners of dogs involved in dog harassment incidents; first explain consequences of dog nuisance behavior and instruct to leash their dog, and second, issue a notice of violation if compliance cannot be obtained.	As Necessary
		d. Familiarize wilderness personnel with consequences of dog nuisance behavior.	Annually (June)
15. Visual Management	1. Maintain visual quality for maximum retention of the natural landscape. 2. Encourage use of earth-colored equipment and camping out-of-sight of other parties.	1a. Wilderness rangers correct man-caused visual intrusions along trails where feasible (e.g., brush in, place rocks on side hills, disperse blackened rocks in nondesignated campsites).	On-going
		b. Remove all outdated, unnecessary or nonstandard (FSH 7109.11) signs and other man-made facilities of no historical value.	9/83
		2. Recommend in MBSW brochure (see Public I & E Element in Prescription 1) the use of earth-colored equipment and to camp out-of-sight of other parties.	3/82

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
16. Cultural Resources	1. Identify all cultural resources having potential for the National Register of Historic Places.	1a. Conduct a Stage 1 cultural resource inventory.	9/82
		b. Conduct a Stage 2 cultural resource inventory in likely sites identified in Stage 1.	1982
		c. Assess Stage 2 inventoried sites for National Register significance.	1985
		d. Conduct a Stage 3 inventory of proposed development area (e.g., mining).	As Necessary
	2. Protect those cultural resources which qualify for the National Register of Historic Places pursuant to public law and 36 CFR 800.	2. Determine protective measures of potential and qualifying historic places on a case-by-case basis.	As Necessary
17. Livestock	1. Provide for livestock use consistent with levels of acceptable biophysical and social impacts (see Capability Areas in Appendix K and related Elements in Prescriptions).	1a. Monitor livestock use and take appropriate mitigating actions in areas where (1) unacceptable impacts currently exist and (2) where forage condition declines over a two-year period.	As Necessary
		b. Sample range readiness on 80 percent of initial turn-on pastures.	Annually
		c. Contact all permittees prior to grazing season and field check allotment plan compliance on 100 percent of active allotments.	Annually
		d. Count 50 percent or more of permitted livestock.	Annually
		e. Determine range condition and trend on 20 percent or more of active allotments per year. Measure each active allotment at least every five years. On allotments with suspected or known resource conflicts, measure forage utilization annually.	Annually
		f. Revise allotment plans to correct, maintain, or enhance biophysical and social elements on a case-by-case basis.	As Necessary
		g. If use exceeds capacity, revise range management plan to bring allotment back to acceptable conditions on a case-by-case basis.	As Necessary
18. Non-Federal Lands	1a. Encourage only those uses of privately owned land that are consistent with biophysical and social elements.	1a. Contact landowners having property inside MBSW concerning opportunity for land purchase or exchange. Easements and rights-of-way should be considered when a landowner does not wish to sell or exchange the land (see Appendix V, #4).	12/81
	b. Eliminate or reduce conflicts caused by intermingled private land within or adjacent to wilderness.	b. Identify landowners having property adjacent to MBSW concerning opportunities for right-of-way, easement, purchase or exchange.	1983
		c. Review opportunities for rights-of-way, easements, purchases, or land exchanges.	Annually

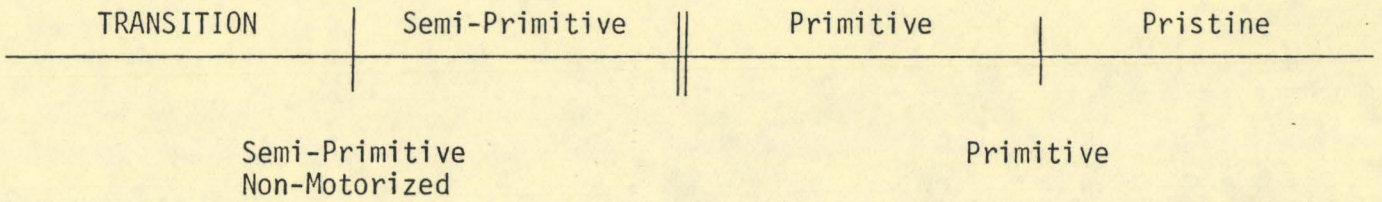
Wilderness Elements	Subgoals or Objectives	Actions	Target Date
19. Research/ Education	1a. Permit research and educational activities consistent with biophysical and social resources. Preference among research activities given to those providing managerially relevant information.	1a. Review and evaluate research and educational operating plans. Research operating plans must be received 30 days prior to proposed field activities.	As Necessary
	b. Permit research and educational activities in those wilderness opportunity areas in which the success of such activities is dependent on area.	b. Direct research and educational activities not dependent on wilderness resource or its users to areas outside of wilderness.	As Necessary
	2. Coordinate research and educational activities.	c. Cooperate and coordinate with RMS/CSU in monitoring MBSW interim management direction as part of the Cooperative Management Research Demonstration Project.	1980-83
		d. Develop and prioritize a "Research Needs Statement" and distribute it to agencies and institutions in Rocky Mountain Region known to be involved in wilderness-related research activities.	1981
		e. Maintain final research reports on file at District Office.	As Necessary
		2. Review known research and educational activities for forthcoming year at coordination meetings (see Administration Element in Prescription 1).	Annually (Spring)
20. Monitor/ Evaluation	1. Monitor interim management direction (see Appendix T).	1a. Prepare a task-completion check list as part of annual operating plan (see Administration Element in Prescription 1) relating to all specific actions in Prescriptions and management unit direction.	Annually
	2. Evaluate intermin management direction (see Appendix T).	b. Collect and maintain administrative records pertaining to the specific actions identified in Prescriptions and management unit direction (target date/completion date; estimated cost/actual cost; planned actions/ actual actions).	On-going
		c. Establish a Citizen Work Group to assist in monitoring. The Group includes: the Wilderness Coordinator, one representative from White River National Forest Supervisor's Office, the Aspen, Sopris, and Taylor River Ranger Districts, Forest Service research and several people from local interest groups. The Group convenes in the fall of each year to discuss implementation. The Wilderness Coordinator will prepare a report from the meeting and distribute it to the Citizen Work group.	6/81
		d. Develop and direct field monitoring activities as part of the annual operating plan which instructs seasonal MBSW personnel to systematically collect relevant information. The field data summarized (in report form) during a seasonal's employment and reviewed by the Wilderness Coordinator prior to seasonal's departure.	Annually
		e. Maintain trend analysis records pertaining to the impacts of the biophysical and social elements.	Annually
		f. Maintain a file documenting new issues and concerns, changing individual or social values, and new policy directives.	On-going

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
20. Monitor/ Evaluation - Continued		g. Conduct user surveys to aid in assessing plan implementation, new issues and concerns, and opportunities and changing individual or social values.	1980 & 1982
		2. Systematically assess (in report form) the (1) information obtained from 7 preceding monitoring actions (1a-g) and (2) determine if prescribed goals and objectives for the seven indicator management units have been achieved--Snowmass Lake, West Maroon, Conundrum, Capitol, Bear Creek, Geneva, and Avalanche. Prepare evaluation report for review by the Citizen Work Group and make recommendations for refinement of the direction, if necessary. Make report known and available for public comment.	1983

MANAGEMENT PRESCRIPTION #2: TRANSITION OPPORTUNITY AREA

Where it Applies: This prescription applies to major trailheads and their area of influence where trail and camp encounters per typical peak-use day are generally high (>20); low levels of solitude are expected; evidence of past use is apparent; biophysical impacts (particularly vegetation) are apparent; few opportunities for challenge, risk, self-reliance exist; and public information and VIS contacts are high.

WILDERNESS OPPORTUNITY AREAS



RECREATION OPPORTUNITY SPECTRUM

Goals:

1) Provide for users (particularly day-users and novices) who have a low level of skills, knowledge, experience, and low expectations for solitude and unconfined recreation.

2) Provide for high levels of information and education with emphasis on wilderness ethics.

3) Provide for other uses of wilderness so that they are consistent with the high volume/day-use recreation activities.

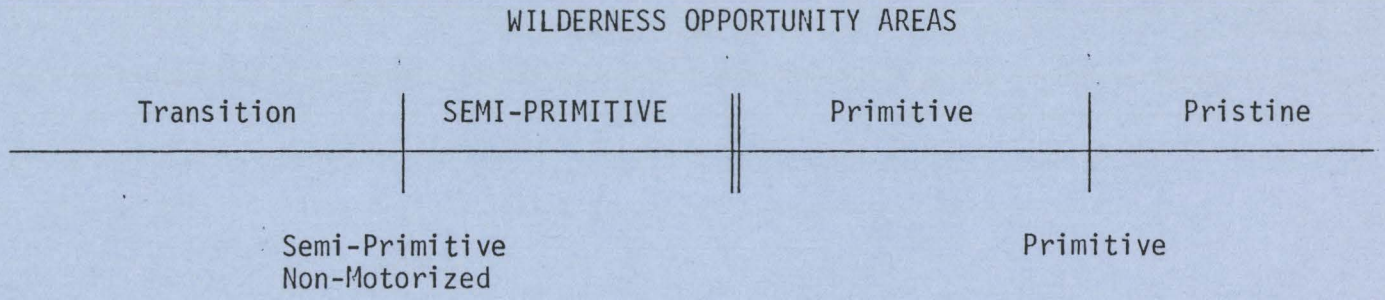
TRANSITION

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
1-Soils, 2-Water, 3-Air, 5-Vegetation, 6-Mineral, 7-Fire, 8-I & D, 14-Dogs, 16-Cultural Resources, 18-Non-Federal Lands, 19-Research/Education 20-Monitor/Evaluation	For these elements, see Area-Wide Prescription - #1		
4. Fish and Wildlife	1. Provide opportunities to observe small animal species tolerant of the presence of humans.	1a. Inform visitors (1) not to harass or feed wildlife, (2) wildlife viewing opportunities are best in early or late day, and (3) that fishing and large wildlife viewing opportunities are better in more remote areas.	On-going
		b. Inform people seeking fishing and large wildlife viewing opportunities of areas outside of transition and nearby non-wilderness areas.	As Necessary
9. Administration	1. Contact 90 percent or more of parties between July 1 and Labor Day.	1a. Provide information on trailhead bulletin board and that offered by wilderness personnel indicating transition area is primarily for day-use recreation area.	7/81 & Annually
		b. Wilderness personnel contact camper parties and (1) encourage camping beyond transition area, and (2) indicate location of designated campsites.	7/81 & Annually
		c. Determine number of day-users by electric eye trail counters and wilderness ranger tallies. Determine backcountry use by placing registration boxes beyond transition area.	7/81 & Annually
10. Recreation	1. Allow for type and volume of recreation use consistent with maintaining biophysical elements.	1a. Provide a wilderness information specialist at least 5 days per week near trailhead and parking lot area between July 1 and Labor Day.	On-going
	2. Allow camping only in designated campsites (see Appendix V, #5), with no open campfires allowed (stoves only).	b. Provide a wilderness ranger 7 days/week at or near popular destinations between July 1 and Labor Day.	On-going
	3. Permit only through travel by horses.	2. Locate and post (designate) campsites so that tents are out of sight from trail and from no more than two other campsites.	9/81
		3. Wilderness ranger to check on stock use.	On-going
11. Transportation	1. Provide for hiker use and transient horse use.	1a. Provide Level 3 maintenance of trails, trailheads, and signs (see Appendix R for maintenance level descriptions).	On-going
	2. When a stream crossing structure is needed, use the most primitive structure which will resolve the problem, considering the mode of travel and needs of the frequently novice user of the transition area (see FSM 2323.11c--3).	b. Inspect signs and remove brush debris and litter on a daily basis between July 1 and Labor Day.	Annually
		2. The needs for crossing structures will be individually assessed and a decision will be based on safety factors rather than convenience.	As Necessary

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
12. Public Safety	1. Inform 75 percent of users of their personal safety responsibility.	1. Indicate at trailhead on wilderness regulations sheet that "Safety in wilderness is your responsibility."	7/81
13. Public Information and Education	1. Provide information to all visitors between July 1 and Labor Day	1a. Build and maintain natural appearing information bulletin board in a location apparent to all visitors entering trailhead or at wilderness boundary; to include, but not limited to: - MBSW map - wilderness rules and regulations - MBSW brochure(s) - public safety message - instructions for contacting District Ranger - additional information available and where to locate - paraphrased wilderness philosophy - location of designated campsites	7/81
		b. When wilderness personnel contact visitors, provide (1) educational materials (e.g., Keeping the "Wild" in Wilderness; Backpacking), and (2) an opportunity to ask questions.	Annually
		c. Sign trail junctions to include trail name and mileage to immediate destinations within management unit.	6/81
		d. See also related elements in Prescription #2.	
15. Visual Management	1. Maintain VRM standards as follows: a. Foreground. Retention or preservation VRM standards, except along trails and designated campsites where partial retention is the minimum standard. All areas are sensitivity level 1. b. Middleground outside of planning area. Maintain preservation or partial retention VRM standards with a sensitivity level 1 where viewed from travel routes. c. Middle and background inside planning area. Maintain preservation VRM sensitivity level 1. d. Background outside of planning area. Meets VRM standards established in the Forest Land and Resource Management Plan. e. Evidence of man's activities. Allow permanent evidence in the form of heavily used trails and directional signs to be obvious.	1. See Visual Management and other related Elements in Prescription #1.	
17. Livestock	1a. Provide for livestock consistent with biophysical and social elements.	1a. Restrict livestock use to trailing.	On-going
	b. Reduce livestock and recreation user conflict (see Appendix V, #7).	b. Livestock trailing will be restricted between July 1 and September 10.	On-going
		c. Contact local livestock operators (e.g., ranchers, outfitters) to (1) inform them of policies, and (2) resolve conflicts by means consistent with prescriptions in grazing allotment plans.	9/81 & As Necessary

MANAGEMENT PRESCRIPTION #3: SEMI-PRIMITIVE OPPORTUNITY AREA

Where it Applies: This prescription applies to trail corridors, trailheads, and destination areas where trail and camp encounters per typical peak-use day are generally moderate to high (5-20 other parties); evidence of past use is apparent; biophysical impacts (particularly vegetation) are apparent; users can expect moderate levels of challenge, risk, self-reliance, solitude; management activities are apparent; non-conforming but accepted uses might be evident.



Goals:

1) Provide for predominantly unmodified biophysical elements.

2) Provide for a moderate degree of public/ranger contact, information, provisions for public safety, and facilities for resource protection.

3) Provide for moderate levels of challenge, risk, self-reliance, and solitude which require a moderate level of woodsmanship skills and experience.

SEMI-PRIMITIVE

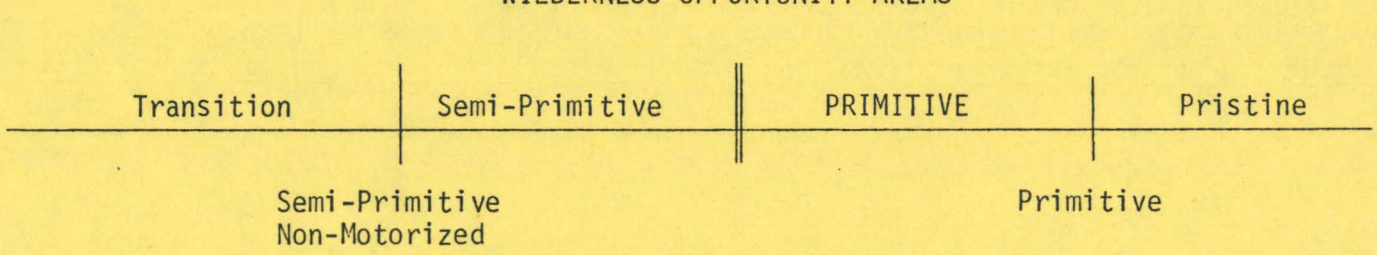
Wilderness Elements	Subgoals or Objectives	Actions	Target Date
1-Soils, 2-Water, 3-Air, 5-Vegetation, 6-Mineral, 7-Fire, 8-I & D, 12-Public Safety, 14-Dogs, 16-Cultural Resources, 17-Livestock, 18-Non-Federal Lands 19-Research/Education 20-Monitor/Evaluation	For these elements, see Area-Wide Prescription - #1		
4. Fish and Wildlife	1. Provide opportunities to observe tolerant animal species.	1. Maintain record of bighorn sheep and threatened and endangered species sightings.	On-going
9. Administration	1. Contact 33 percent or more of parties between July 1 and Labor Day.	1a. Provide sufficient wilderness ranger coverage between July 1 and Labor Day to contact one out of three parties for purposes related to "Good Host" compliance and monitoring (see Management Unit Direction for specific ranger staff-day allocation).	7/81 & Annually
		b. Provide registration boxes at trailheads (Level 2 maintenance).	On-going
10. Recreation	1. During peak-use season (late July/early August) the average number of trail encounters per mile is 2 other parties, and the probability of camping alone (no other parties within sight or sound) is between 10-40 percent (see wilderness simulator data in Appendix 0).	1a. Identify one mile trail segment in two indicator management units and record parties encountered during mid-day of two weekend and two week days between July 20 and August 10.	Annually
		b. Campsites are within sight of no more than two other campsites.	As Necessary
11. Transportation	1. Provide for hiker and horse use. Trails maintained at Level 2.	1 Level 2 trail maintenance of 50 percent or more of management units each season. Each semi-primitive area trail receives Level 2 maintenance at least every other year.	Annually
	2. When a stream crossing structure is needed, use the most primitive structure which will solve the problem, considering the mode of travel and needs of the users of semi-primitive areas.	2. The need for crossing structures will be individually assessed and a decision will be based on safety factors rather than convenience.	As Necessary
13. Public Information and Education	1. Provide information to all visitors between July 1 and Labor Day.	1a. Build and maintain natural appearing information bulletin board in a location apparent to all visitors entering trailhead or at wilderness boundary; to include but not limited to: - MBSW map - wilderness rules and regulations - public safety message - instructions for contacting District Ranger - additional information available and where to locate - paraphrased wilderness philosophy - location of designated campsites	7/81

SEMI-PRIMITIVE

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
13. Public Information and Education - continued		b. When wilderness personnel contact visitors, provide (1) educational materials (e.g., backpacking), and (2) an opportunity to ask questions.	Annually
		c. Sign trail junctions with trail name only.	6/81
		d. See also related elements in Prescription #3.	
15. Visual Management	1. Maintain VRM standards as follows: a. All areas are sensitivity level 1. b. Foreground. Preservation VRM standards except adjacent to trails and designated campsites where partial retention is the standard. c. Middleground and foreground within the planning area. Preservation VRM standards. d. Middleground and background outside the planning area. Retention VRM standards. Make visual evidence of current human use harmonious with the physical setting in terms of form, line, color, and texture. e. Evidence of man's activities. No permanent evidence that does not qualify as historically significant or is otherwise authorized by provision of the Wilderness Act or subsequent legislation.	1. See Visual Management and other related Elements in Prescription #1.	

MANAGEMENT PRESCRIPTION #4: PRIMITIVE OPPORTUNITY AREA

Where it Applies: This prescription applies to remote area where low use trails exist, where trail and camp encounters per typical peak-use day are generally low to moderate (0-5); evidence of past use is not very apparent; biophysical impacts are only apparent at specific sites; users can expect high levels of challenge, risk, self-reliance, solitude; management activities are not very apparent; non-conforming but accepted uses might be evident.



Goals:

1) Provide for essentially unmodified biophysical elements with the influence of man only evident at specific sites.

2) Provide for a low degree of public/ranger contact, information, and provisions for public safety.

3) Provide for a high degree of user freedom of choice.

4) Provide for high levels of challenge, risk, self-reliance, solitude, and orienteering which require a high level of woodsmanship skills and experience.

PRIMITIVE

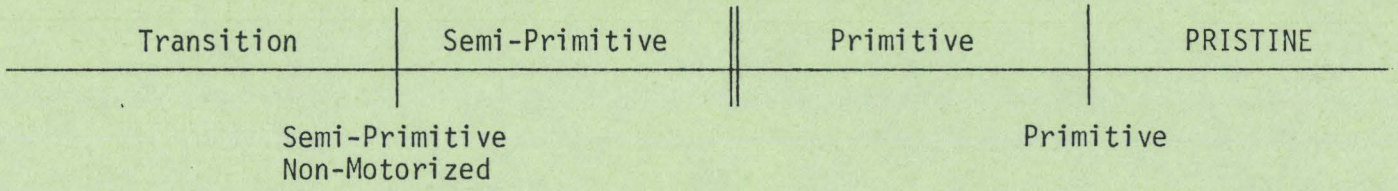
Wilderness Elements	Subgoals or Objectives	Actions	Target Date
1-Soils, 2-Water, 3-Air, 5-Vegetation, 6-Mineral, 7-Fire, 8-I & D, 14-Dogs, 16-Cultural Resources, 18-Non-Federal Lands, 19-Research/Education 20-Monitor/Evaluation	For these elements, see Area-Wide Prescription - #1		
4. Fish and Wildlife	1. Provide opportunities to observe tolerant and intolerant animal species.	1. Maintain record of bighorn sheep and threatened and endangered species sightings.	On-going
9. Administration	1. Contact 25 percent or less of parties between July 1 and Labor Day.	1a. Provide sufficient wilderness ranger coverage between July 1 and Labor Day to contact approximately one out of four parties for purposes of compliance, public safety, and monitoring (see Management Unit Direction for specific man-day allocation).	7/81 & Annually
		b. Provide registration boxes at trailheads (Level 2 maintenance).	On-going
10. Recreation	1. During peak-use season (late July/early August) the average number of trail encounters per mile is 1 party, and the probability of camping alone (no other parties within sight or sound) is 40 percent or greater (see wilderness simulator data in Appendix O).	1a. Identify one mile trail segment in two indicator management units and record parties encountered during mid-day between July 20 and August 10 when wilderness ranger is in area.	Annually
		b. Encourage all parties to camp out-of-sight of trails and other camping parties.	On-going
	2. Encourage camping by large parties in primitive area as opposed to transition or semi-primitive areas (see Appendix V, #13).	2. Inform large parties when requesting special use permit to camp in primitive areas.	As Necessary
	3. Maintain campsites by standards in Appendix S (Campsite Condition Rating Classes and Size of Campsites).	3a. Rehabilitate campsites on a case-by-case basis (e.g., brush in, scarify soil, reintroduce plant species, disperse firering, close).	As Necessary
		b. No designated campsites except when required for larger groups.	On-going
11. Transportation	1. Provide for hiker- and horse-use trails and some hiker trails where appropriate. Trails maintained at level 1.	1a. Level 1 trail maintenance of 50 percent or more of management units each season. Each primitive area trail receives Level 1 maintenance at least every other year.	Annually
	2. When a stream crossing structure is needed, use the most primitive structure which will solve the problem, considering the mode of travel and needs of the users of primitive areas.	b. Identify trails that are not maintained for horse travel and include in public information contacts.	9/80 & On-going
		2. The need for crossing structures will be individually assessed and a decision will be based on safety factors rather than convenience.	As Necessary
12. Public Safety	1. Users expected to have a high level of woodsmanship-safety skills for primitive area travel. Few on-site public safety provisions exist.	1a. Indicate (e.g., color-code, symbols) in MBSW brochure and/or MBSW trailhead maps that (1) users are expected to have a high level of woodsmanship-safety skills, (2) that few on-site public safety provisions exist, and (3) that USFS or USGS topographic map is recommended.	3/82
		b. See also Public I & E Element in Prescription #4.	

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
13. Public Information and Education	1. Provide information to all visitors between July 1 and Labor Day. 2. Provide primitive on-site signing.	1. Build and maintain natural appearing information bulletin board in a location apparent to all visitors entering trailhead or at wilderness boundary; to include, but not limited to: - MBSW map - wilderness rules and regulations - public safety message - additional information and where to locate - paraphrased wilderness philosophy	7/82
		2a. Indicate trail junctions involving only two trails by rock cairns and/or trail blazes only if tread is not evident. Place sign with trail name only at junctions of three or more trails.	7/81
		b. Remove unneeded signs.	7/81
15. Visual Management	1. Maintain VRM standards as follows: a. All areas are sensitivity level 1. b. Foreground. Preservation VRM standards except adjacent to trails and designated campsites where partial retention is the standard. c. Middleground and foreground within the planning area. Preservation VRM standards. d. Middleground and background outside the planning area. Retention VRM standards. Make visual evidence of current human use harmonious with the physical setting in terms of form, line, color, and texture. e. Evidence of man's activities. No permanent evidence that does not qualify as historically significant or is otherwise authorized by provision of the Wilderness Act or subsequent legislation.	1. See Visual Management and other related Elements in Prescription #1.	
17. Livestock	1. Provide for domestic and transportation livestock use consistent with biophysical and social elements.	1a. Maintain records of verbal or written dissatisfactions. For verbal dissatisfaction, record when, where, and type of problem. Summarize in annual wilderness coordinator's report to District Ranger.	On-going Annually
		b. When public likely to encounter livestock on grazing allotments, post notice (including dates) at appropriate trailheads so those desiring can avoid likely encounters.	As Necessary

MANAGEMENT PRESCRIPTION #5: PRISTINE OPPORTUNITY AREA

Where it Applies: This prescription applies to the most remote areas where few, if any, trails exist; trail and camp encounters per typical peak-use day are generally very low (0-2); evidence of past use is not apparent; biophysical impacts are not apparent; users can expect very high levels of challenge, risk, self-reliance, solitude; management activities are only directed to biophysical element protection by non-apparent means; non-conforming but accepted uses not evident.

WILDERNESS OPPORTUNITY AREAS



RECREATION OPPORTUNITY SPECTRUM

Goals:

1) Provide for unmodified biophysical elements to act as free as possible.

2) Social uses are allowed but not encouraged.

3) Remove all evidences of users and rehabilitate biophysical impacts caused by man.

4) Provide for very high levels of challenge, risk, self-reliance, solitude, and orienteering which require the highest levels of woodsmanship skills and experience.

PRISTINE

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
1-Soils, 2-Water, 3-Air, 5-Vegetation, 6-Minerals, 7-Fire, 8-I & D, 14-Dogs, 16-Cultural Resources, 18-Non-Federal Lands, 19-Research/Education 20-Monitor/Evaluation	For these elements, see Area-Wide Prescription - #1		
4. Fish and Wildlife	1. Provide opportunities to observe tolerant and intolerant animal species.	1. Maintain record of bighorn sheep and T & E sightings.	On-going
9. Administration	1. Contact 10 percent or less of parties between July 1 and Labor Day.	1. Provide sufficient wilderness ranger coverage to visit likely destination areas at least once between July 1 and Labor Day for purposes related to compliance, public safety, and monitoring (see Management Unit Direction for specific ranger staff-day allocation).	Annually
10. Recreation	1. During peak-use season (late July/early August) the probability of camping alone (no other parties in sight or sound) is 70 percent or greater (see wilderness simulator data in Appendix O). 2. Do not encourage use.	1. Maintain record of of user encounters per day when wilderness ranger patrols area between July 1 and Labor Day. 2. See Public I & E Element in Prescription #5.	Annually
11. Transportation	1. There are no system trails in pristine areas. Human travel is either cross-country or utilizes existing game trails. 2. Junctions with trails or routes in adjacent opportunity areas that access pristine areas are not apparent.	1. Obliterate highly obvious evidence of human use.	9/80 & On-going
12. Public Safety	1. Users expected to have a high level of woodsmanship-safety skills for pristine area travel. Few, if any, on-site public safety provisions exist.	1a. Indicate (e.g., color-code, symbols) in MBSW brochure and/or MBSW trailhead maps (1) that users are expected to have a high level of woodsmanship-safety skills, (2) few, if any, on-site public safety provisions exist, and (3) that a USFS or USGS topographic map is recommended. b. See also Public I & E Element in Prescription #5.	3/82

Wilderness Elements	Subgoals or Objectives	Actions	Target Date
13. Public Information and Education	1. Provide information only to the extent of informing public that very remote areas exist for them to find and public safety message.	1. Do not provide site specific information (e.g., names of trails, lakes, vistas) on signs, maps, or brochures to be developed.	On-going
	2. No on-site signing.	2a. Remove all signs within pristine area.	9/80
		b. Remove or change signs which make reference to any pristine area.	9/81
15. Visual Management	1. Maintain VRM standards as follows: a. Foreground, middleground, and background within the planning area. Preservation VRM standards. b. Foreground and middleground outside of the planning area. Preservation or retention VRM standards. c. Evidence of man's activities. No evidence of current activity.	1. See Visual Management and other related Elements in Prescription #5.	
17. Livestock	1. Provide for domestic and transportation livestock use consistent with biophysical and social elements.	1a. Maintain records of verbal or written dissatisfactions. For verbal dissatisfactions, record when, where, and type of problem. Summarize in annual wilderness coordinator's report to District Ranger.	On-going Annually
		b. When public likely to encounter livestock on grazing allotments, post notice (including dates) at appropriate trailheads so those desiring can avoid likely encounters.	As Necessary

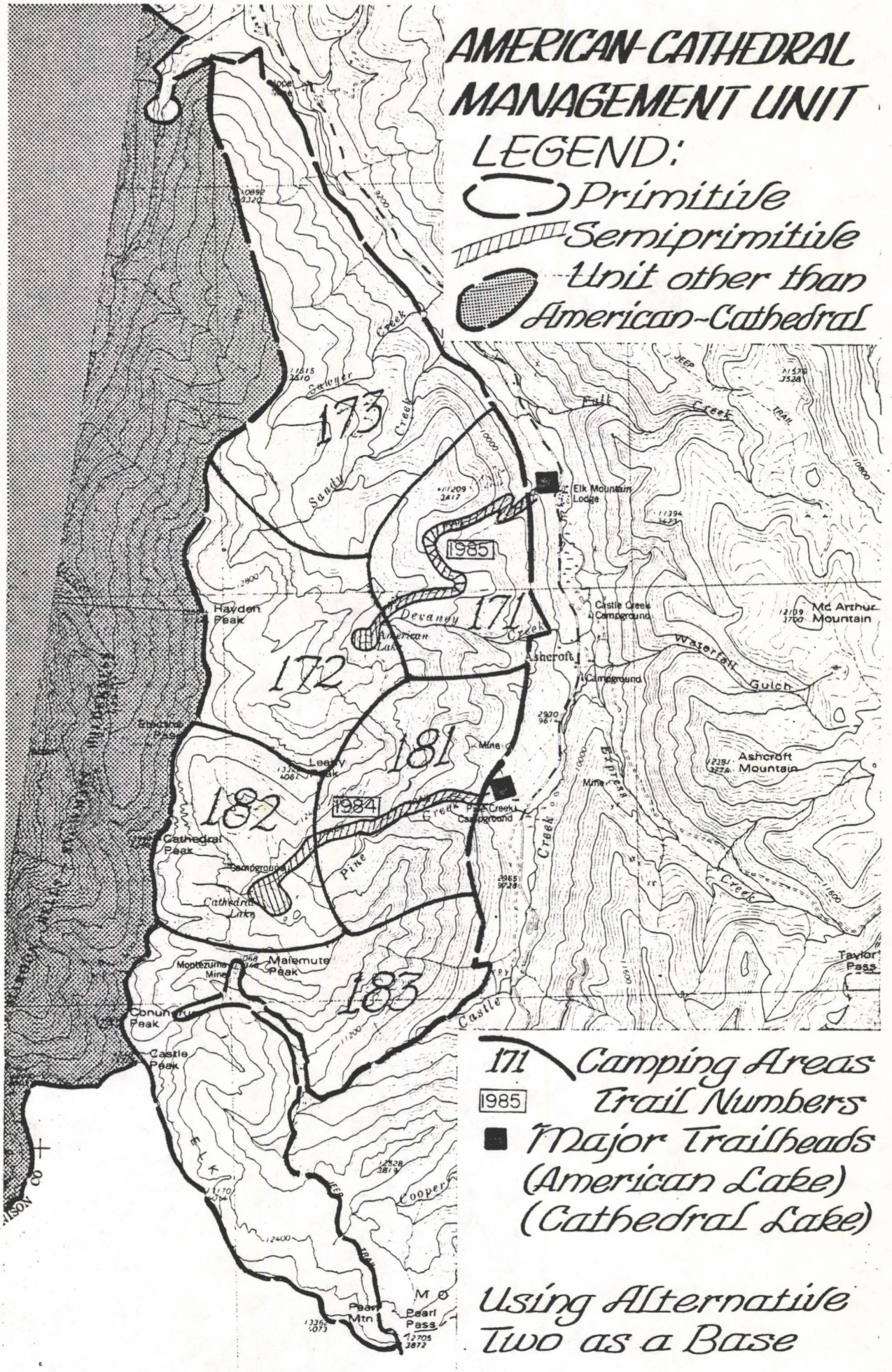
Management Unit Direction

The following section refers to each of the 19 management units in the MBSW. It serves five purposes:

1. indicates the management prescriptions to be applied,
2. identifies specific actions, if any, related to 20 management elements addressed in prescriptions,
3. identifies actions that are specific to the unit that do not apply wilderness-wide or to wilderness opportunity areas,
4. identifies the number of useable acres (<30 percent slope) in each wilderness opportunity area within management unit,
5. identifies the maximum camping groups at one time which are recommended in each wilderness opportunity area within management unit.

Camping groups at one time (GAOT) were determined by considering wilderness opportunity area, designated campsites, spacing, slope, vegetation, cover, attractions (e.g., lakes, vistas), critical habitat areas, and wilderness travel patterns. These camping GAOT's are maximum numbers which serve as a standard for determining when, where, and how often there are too many camping groups at one time within each wilderness opportunity area with each management unit. See Appendix P for camping capacity explanation.

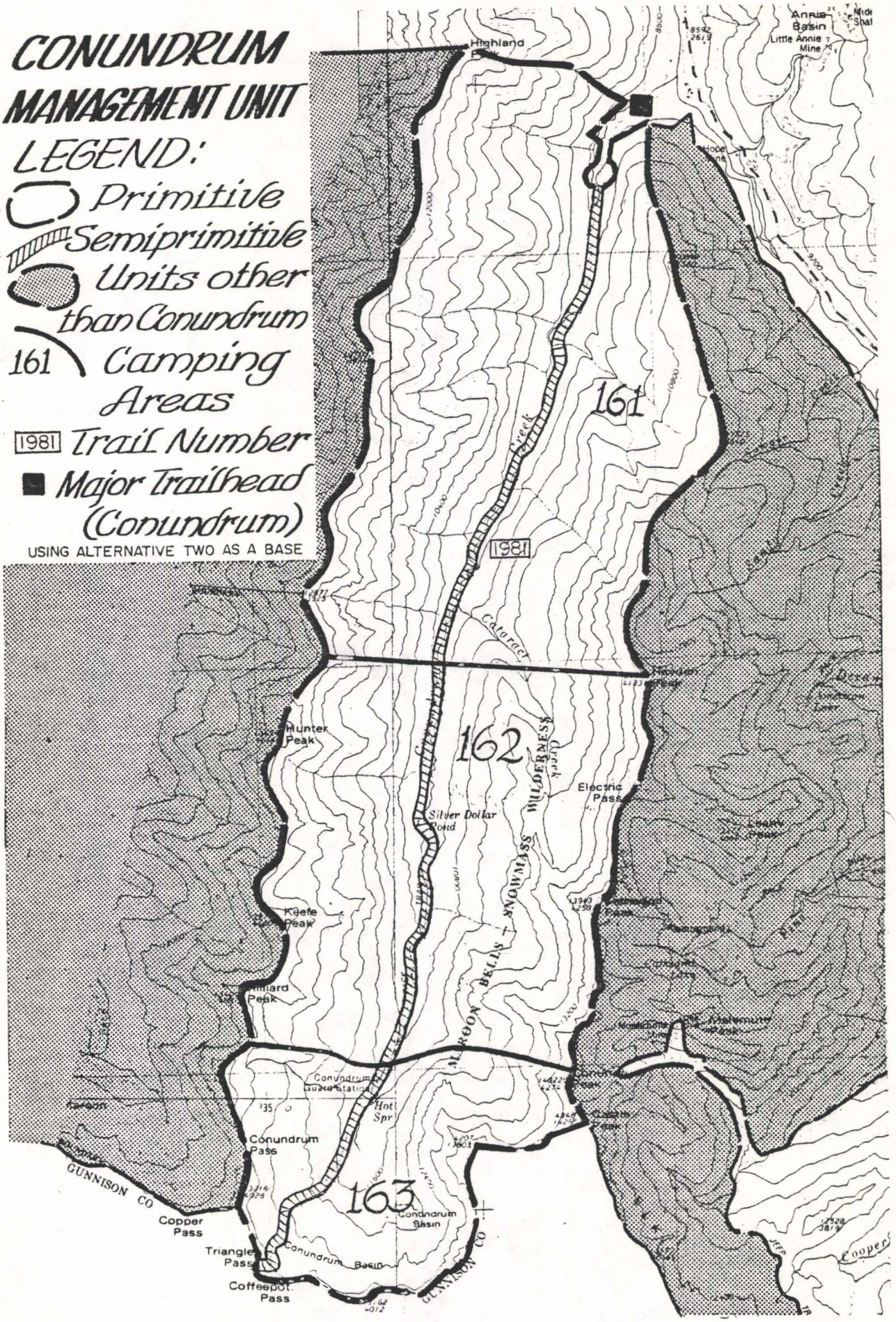
The transition and semi-primitive opportunity areas extend 200 feet on either side of indicated trails and ¼ mile away from major destinations (see individual management unit maps). The primitive and pristine opportunity areas are as indicated on the management unit maps.


AMERICAN-CATHEDRAL MANAGEMENT UNIT
LEGEND:
Primitive
Semiprimitive
Unit other than American-Cathedral
173
172
171
181
182
183
1985
1984
Elk Mountain Lodge
Castle Creek Campground
Ashcroft Campground
Peel Creek Campground
Cathedral Campground
Cathedral Peak
Cathedral Lake
American Lake
Hayden Peak
Conundrum Peak
Castle Peak
Maroon Bells-Snowmass Wilderness
Mt. Arthur
Ashcroft Mountain
Taylor Pass
Pearl Pass
Pearl Mtn
Waterfall Gulch
Full Creek
Sandy Creek
Devaney Creek
Pine Creek
Castle Creek
Cooper Creek
Elk Creek
Jeep Trail
171 Camping Areas
1985 Trail Numbers
Major Trailheads
(American Lake)
(Cathedral Lake)
Using Alternative Two as a Base

MANAGEMENT UNIT: American-Cathedral RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-18; Primitive-12 Useable Acres (< 30% Slope): Semi-primitive-152, Primitive-1930

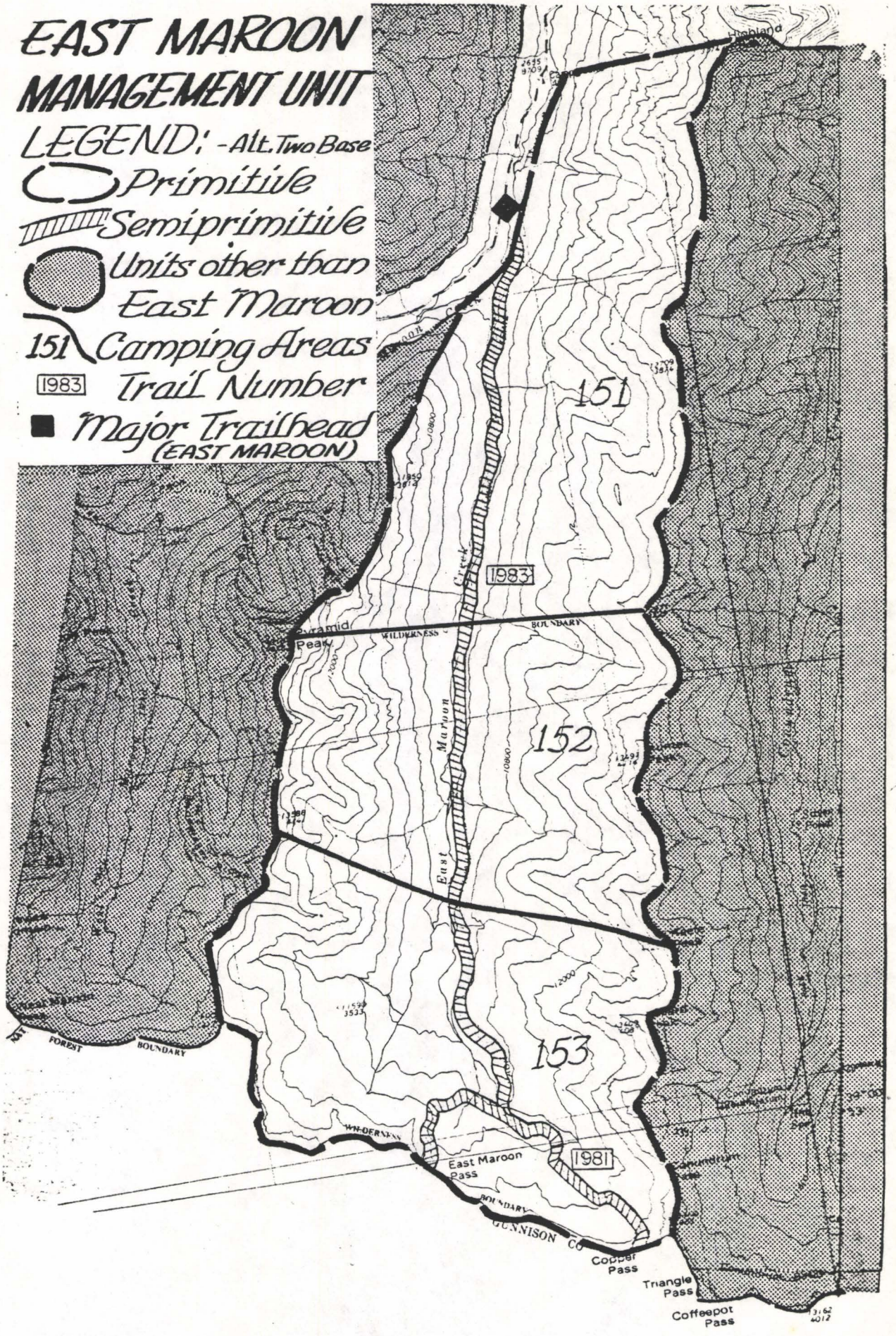
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 2 days per week of wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually
Air Quality	
3. Establish photopoint on knoll north of Electric Pass to monitor visibility.	8/81
4. Take photos between July 1 - September 15 (see visibility monitoring guidelines in Appendix Q).	Annually
Non-Federal Lands	
5. Complete acquisition of land (approximately 350 acres).	In process
Recreation	
6. Coordinate with Elk Mountain Lodge owners regarding volume and location of use.	7/80 and as necessary
7. Reassess the need for limited motorized access from the Cathedral Lake Trailhead for 2,000 feet west for mining.	Annually
Transportation	
8. Install the following sign at Cathedral trailhead: "Trail only maintained to Electric Pass--Dangerous Travel Beyond."	7/81
9. Evaluate the consolidation of the American and Cathedral Lake trailheads.	1/82
10. Assess the continuance of horse use on #1984 above Cathedral Lake.	1/82


CONUNDRUM MANAGEMENT UNIT
LEGEND:
Primitive
Semiprimitive
Units other than Conundrum
161 Camping Areas
1981 Trail Number
Major Trailhead (Conundrum)
USING ALTERNATIVE TWO AS A BASE
Highland
Annie Basin
Little Annie Mine
Hope Mine
161
1981
Cataract Creek
Hayden Peak
162
Hunter Peak
Silver Dollar Pond
Electric Pass
Snowmass Wilderness
Maroon Bells
Keefe Peak
Williard Peak
Conundrum Guard Station
Hot Spr
Conundrum Pass
GUNNISON CO
Copper Pass
Triangle Pass
Coffeepot Pass
163
Conundrum Basin
Conundrum Basin
GUNNISON CO

MANAGEMENT UNIT: Conundrum (INDICATOR UNIT) RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-24; Primitive-10 Useable Acres (< 30% Slope): Semi-primitive-376; Primitive-838

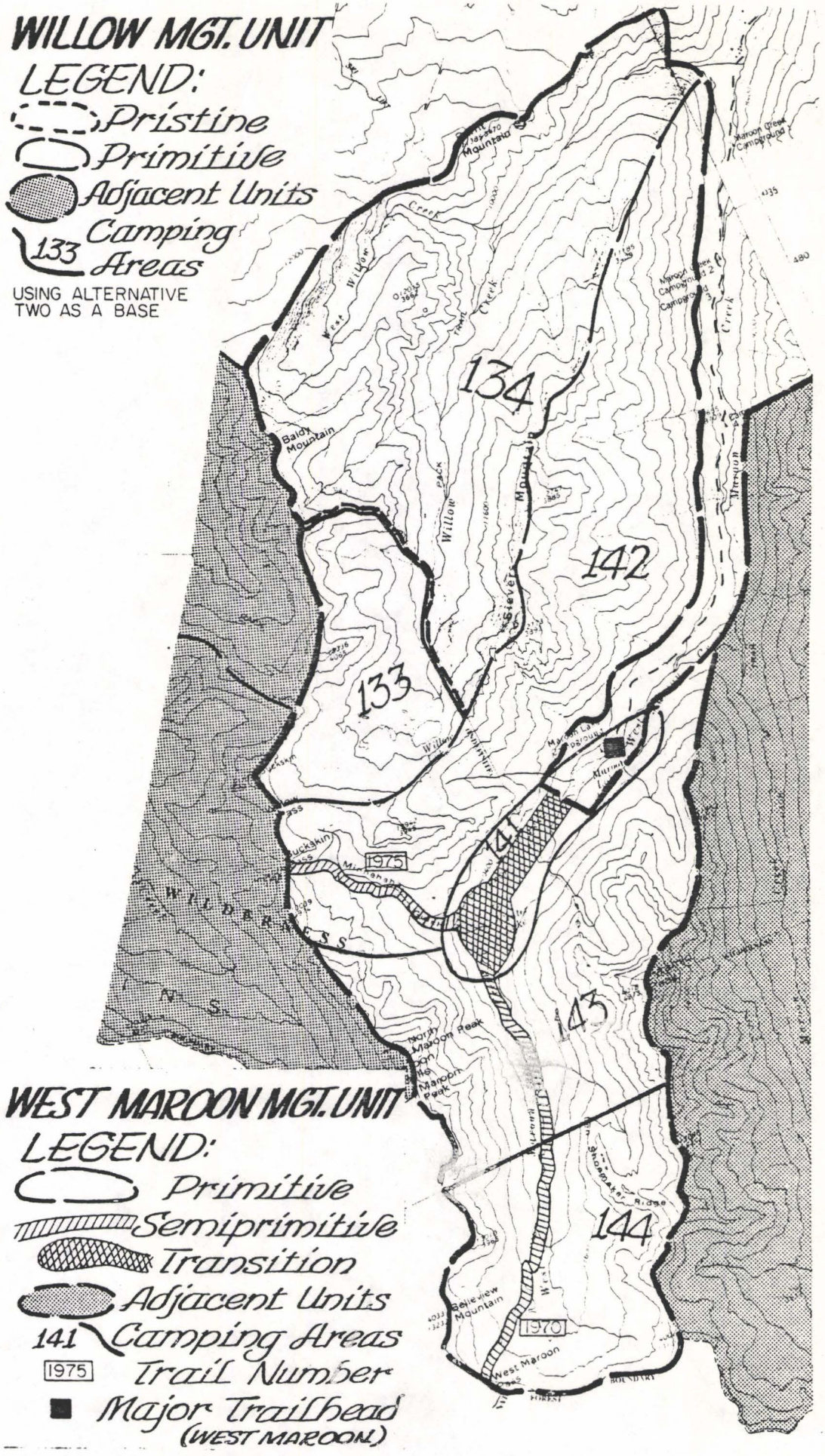
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primiitve (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide 7-day wilderness ranger coverage from Triangle Pass to two miles below Hot Springs between July 1 and Labor Day and an average of 2 days per week of coverage in June and from Labor Day to mid-October (#1981).	7/81 & Annually
3. Locate and establish well-concealed base camp including tent platform in patrol area.	7/81
Cultural Resources	
4. Assess Conundrum Hot Springs Cabin and Pools to determine alternatives for management.	9/82
Fish and Wildlife	
5. Provide solitude for bighorn sheep on ridge area between East Maroon and Conundrum Creeks.	On-going
Non-Federal Lands	
6. Acquire non-federal lands in Conundrum unit.	6/82
Pets	
7. Implement CFR order to close area within 300 feet of Conundrum Hot Springs to pets and horses except for travel through area on trail #1981.	6/81
Recreation	
8. Maintain 12 campsites in area 162 and 8 campsites in area 163 (see Appendix V, #10 and management unit map).	7/81
9. Implement CFR order to close area within 1/4 mile of Hot Springs to campfires (see Appendix V, #11).	6/81
Transportation	
10. Maintain road to Conundrum trailhead in cooperation with Pitkin County.	Annually (June)
11. Water bar and tread construction on trail #1981 between Hot Springs and Triangle Pass	8/82
12. Repair or reconstruct corduroys across boggy area approximately 1 1/2 miles below Hot Springs	8/83
13. Construct by-pass route between 2nd and 3rd stream crossings (from trailhead) for early season entry.	8/83
14. Relocate trail around stream erosion section below Hot Springs.	8/84
15. Obliterate junction of Electric Pass Trail with #1984 near valley bottom.	8/81
16. Reassess the need for limited motorized access to private land owned above the Conundrum Trailhead.	Annually
Monitoring/Evaluation	
17. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see Prescriptions for monitoring implementation).	9/84
18. Maintain records of camping groups per night between July 1 and Labor Day when possible.	7/81 & Annually


EAST MAROON
MANAGEMENT UNIT
LEGEND: - Alt. Two Base
Primitive
Semiprimitive
Units other than
East Maroon
151 Camping Areas
1983 Trail Number
Major Trailhead
(EAST MAROON)
Highland
151
1983
Pyramid
Peak
WILDERNESS
BOUNDARY
Maroon
Creek
152
East
153
FOREST
BOUNDARY
WILDERNESS
1981
East Maroon
Pass
BOUNDARY
GUNNISON CO
Cobeal
Pass
Triangle
Pass
Coffeepot
Pass

MANAGEMENT UNIT: East Maroon RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-10; Primitive-14 Useable Acres (< 30% Slope): Semi-primitive-150; Primitive-1910

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage between July 1 and Labor Day.	7/81 & Annually
Recreation	
3. Encourage horse use and large parties as an alternative to Conundrum or West Maroon Units.	On-going
4. Coordinate with local mountaineering organizations to develop and implement necessary management actions for climbing areas.	8/82


WILLOW MGT. UNIT
LEGEND:
Pristine
Primitive
Adjacent Units
133 Camping Areas
USING ALTERNATIVE TWO AS A BASE
134
142
133
143
144
141
1975
1970
WILDERNESS
Baldy Mountain
Sievers Mountain
Willow Peak
Buckskin Pass
Maroon Lake
Maroon Creek Campground
Maroon Creek Campground 2
Campground
North Maroon Peak
Maroon Peak
Snowmass Ridge
Bellview Mountain
West Maroon
WEST MAROON MGT. UNIT
LEGEND:
Primitive
Semiprimitive
Transition
Adjacent Units
141 Camping Areas
1975 Trail Number
Major Trailhead (WEST MAROON)

MANAGEMENT UNIT: West Maroon (INDICATOR UNIT) RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Transition-14; Semi-Primitive-15; Primitive-6 Useable Acres (< 30% Slope): Transition-253, Semi-Primitive-140; Primitive-1087

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Transition (#2); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide 7 day Wilderness Information Specialist coverage at Maroon Lake trailhead/parking lot area between July 1 to Labor Day.	6/81 & Annually
3. Provide 7 day wilderness ranger coverage between July 1 to Labor Day.	6/81 & Annually
Air Quality	
4. Establish photopoint on Buckskin Mountain to monitor visibility.	8/81
5. Take photos between July 1 - September 15 (see visibility monitoring guidelines in Appendix Q).	8/81 & Annually
Public Information	
6. Develop an information and education brochure for Maroon Creek Valley users which discusses such things as flora, fauna, geology, and wilderness ethics and is consistent with and complements MBSW management direction.	4/82
Public Safety	
7. Maintain "Deadly Bells" sign at junction of the Crater and Beaver nature trail (see Appendix V, #9).	On-going
8. Coordinate with local mountaineering organizations to develop and implement necessary management actions for climbing areas.	8/82
Recreation	
9. Give primary consideration to recreation day use and scenic quality in transition area.	On-going
10. Maintain 14 campsites in area 141 (see Appendix V, #10 and see management unit map).	7/81
11. Implement CFR order to close area within 1/4 mile of Crater Lake to campfires (see Appendix V, #11).	7/81
12. Inventory climbing routes (see also action #8).	8/82
13. Implement CFR order. The area within 1/4 mile of Crater Lake is closed to horses except for through travel.	7/81
14. Implement CFR order. The area within 1/4 mile of Crater Lake is closed to camping except in Forest Service designated campsites.	7/81

MANAGEMENT UNIT: West Maroon -- continued RESPONSIBILITY: Aspen District Ranger

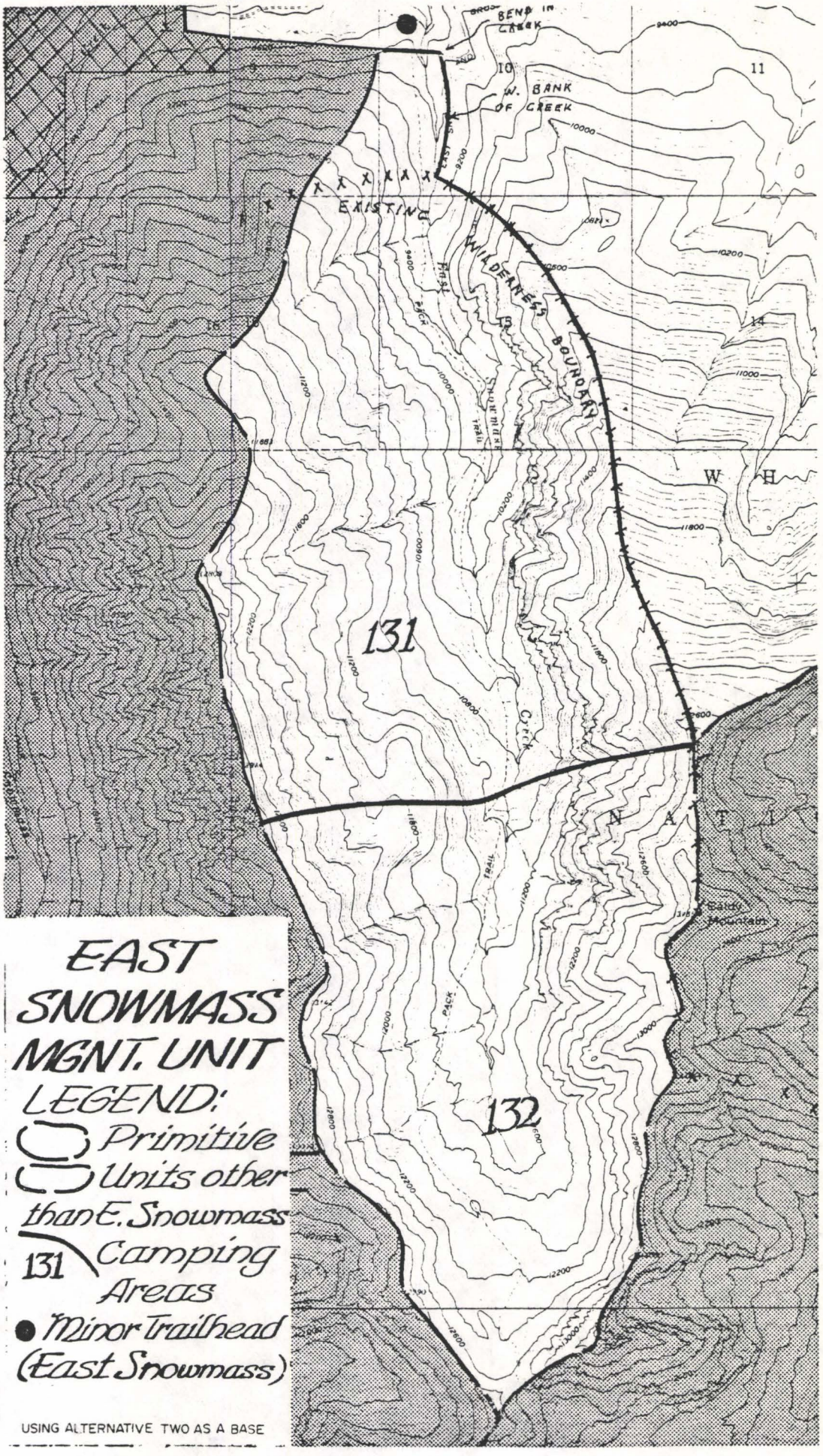
Camping GAOT: Transition-14; Semi-Primitive-15; Primitive-6 Useable Acres (< 30% Slope): Transition-253; Semi-Primitive-140; Primitive-1087

ACTIONS	TARGET DATE
Transportation	
15. Cooperate with Pitkin County in maintaining and operating bus system.	Annually
16. Maintain the direction sign at junction of trails #1970 and #1975.	On-going
17. Do not sign the trail to Minnehaha Falls.	On-going
18. Install directional sign at junction of trails #1975 and #1978.	7/81
19. Water bar and tread construction on eroding portions of trail #1970.	9/82
20. Feasibility study for spur trail to Crater Lake and to relocate trails #1970 and #1975 away from Crater Lake.	9/82
21. Relocate trail #1970 around or through rockslide 3/4 mile above Crater Lake.	9/84
Monitoring/Evaluation	
22. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see Prescriptions for monitoring implementation).	9/84
23. Maintain records of number of camping groups per night between July 1 and Labor Day when possible.	6/81 & Annually

MANAGEMENT UNIT: Willow RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Primitive-6; Pristine-1 Useable Acres (< 30% Slope): Primitive-460; Pristine-895

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Primitive (#4); Pristine (#5) -- See unit map.	8/80
Administration	
1. Provide an average of 1 day per week of wilderness ranger coverage between July 1 and Labor Day.	7/81 & Annually
Fish and Wildlife	
3. Provide seclusion for elk and bighorn sheep in unit.	On-going
Transportation	
4. Obliterate and provide needed erosion control work on trail #2185 and trail #1978 below Willow Lake. Do not include trails in any information effort (e.g., maps).	9/84



EAST SNOWMASS MGNT. UNIT

LEGEND:

- Primitive Units other than E. Snowmass
- 131 Camping Areas
- Minor Trailhead (East Snowmass)

USING ALTERNATIVE TWO AS A BASE

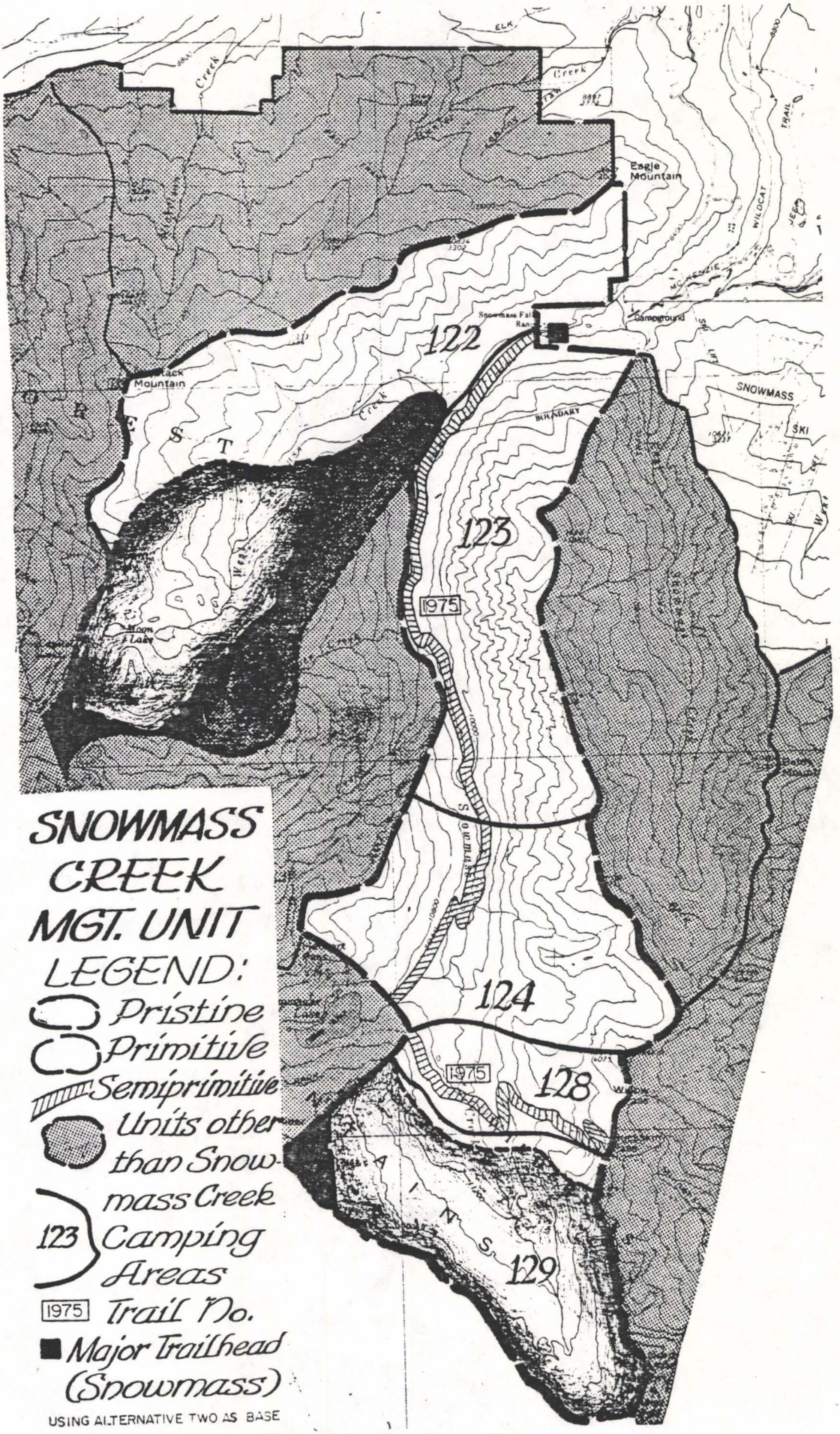
MANAGEMENT UNIT: East Snowmass

RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Primitive-6

Useable Acres (< 30% Slope): Primitive-627

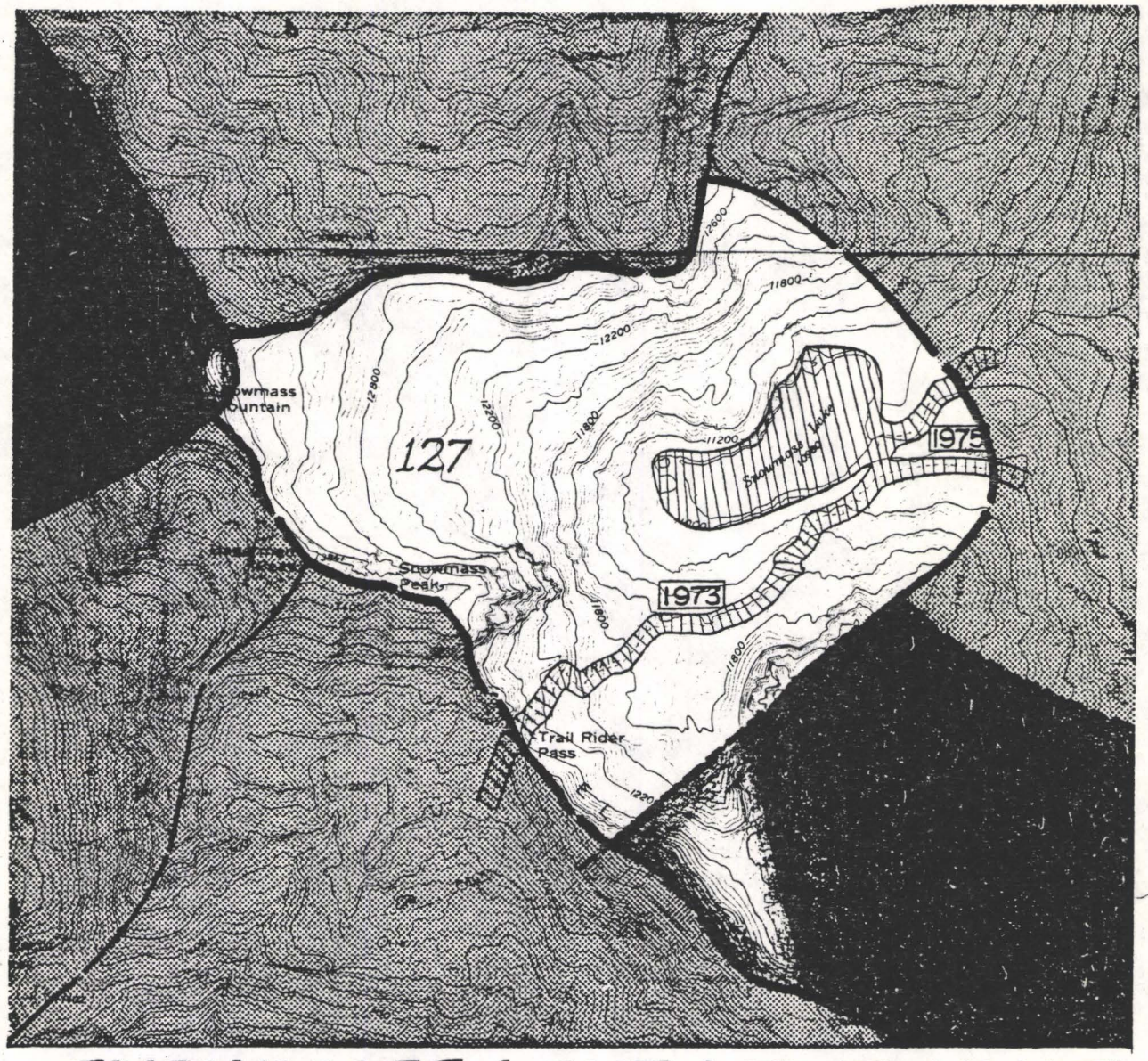
ACTIONS	TARGET DATE
Prescriptions 1. Apply Area-Wide (#1); Primitive (#4). -- See unit map.	8/80
Administration 2. Provide an average of 1 day per 2 weeks of wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually


SNOWMASS
CREEK
MGT. UNIT
LEGEND:
Pristine
Primitive
Semiprimitive
Units other than Snowmass Creek
123 Camping Areas
1975 Trail No.
Major Trailhead (Snowmass)
USING ALTERNATIVE TWO AS BASE
122
123
124
128
129
1975
1975
Eagle Mountain
Rack Mountain
Bloom Lake
Campground
SNOWMASS
SKI
BOUNDARY
WILDCAT
TRAIL
Creek
ELK

MANAGEMENT UNIT: Snowmass Creek RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-17; Primitive-3; Pristine-6 Useable Acres (< 30% Slope): Semi-primitive-188; Primitive-891; Pristine-1735

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4); Pristine (#5) -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage in semi-primitive opportunity area between July 1 and Labor Day.	6/81 & Annually
3. Provide an average of 1 day per 2 weeks of wilderness ranger coverage in both the Lost Remuda and Moon Lake areas between July 15 and Labor Day.	6/81 & Annually
4. Provide 7 day W.I.S. coverage at Snowmass trailhead between July 1 and Labor Day.	6/81 & Annually
Recreation	
5. Maintain 9 campsites in area 124 (see Appendix V, #10 and see management unit map).	7/81
6. Do not sign trails accessing Lost Remuda and Moon Lakes - consider trail obliteration.	On-going
Transportation	
7. Provide directional sign at junction of trails #1973, #1975, and the spur trail to Snowmass Lake.	7/81
8. Relocate trail #1975 upslope around wet areas at beaver ponds near Snowmass trailhead.	8/81
9. Water bar and reconstruct tread on trail #1975 from Snowmass Lake to Trailrider Pass.	8/81



SNOWMASS LAKE MGNT. UNIT

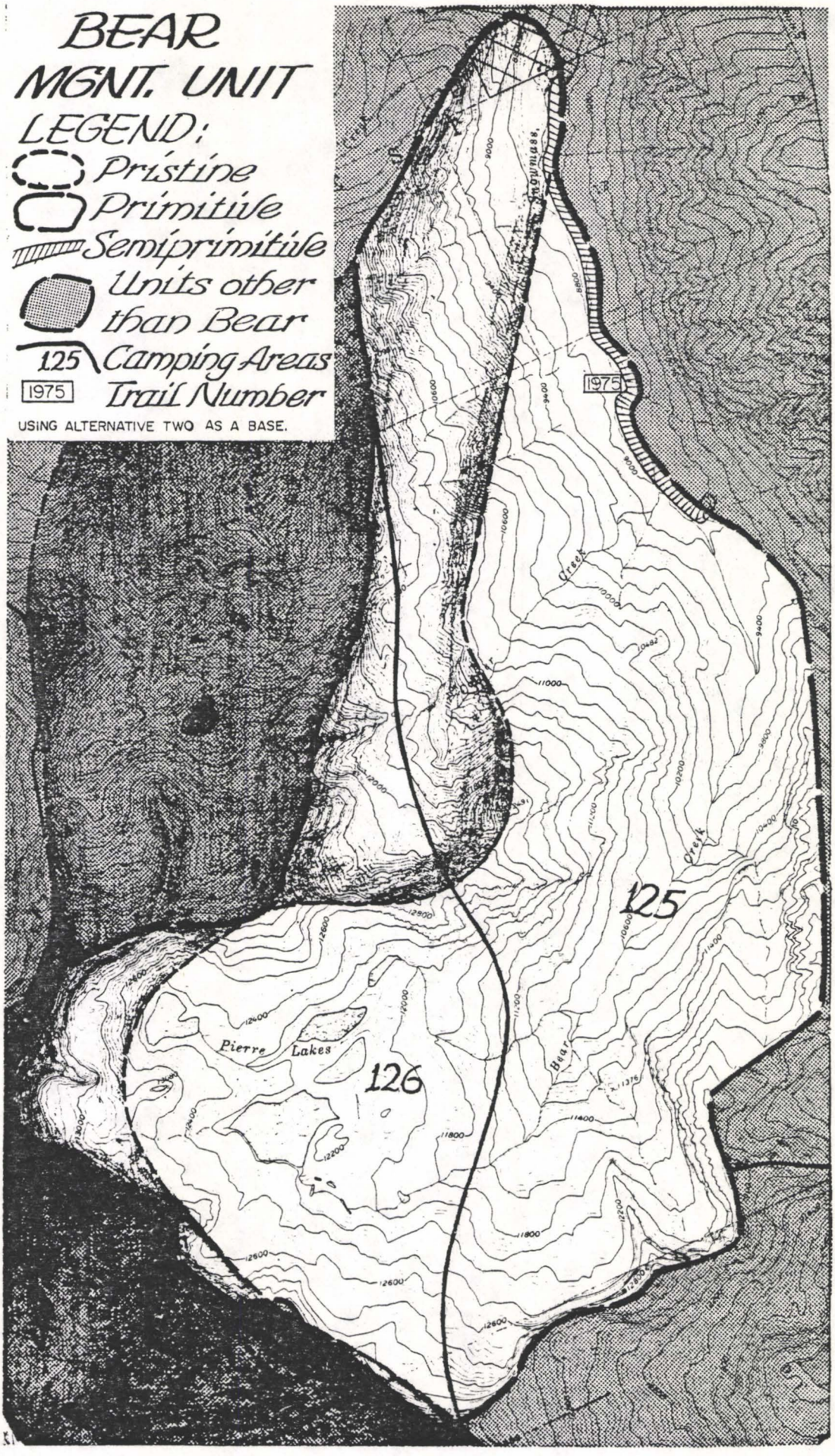
LEGEND:

- Pristine
- Primitive
- Semiprimitive
- Units other than Snowmass Lake
- 127 Camping Area (boundary coincides w/ management unit)
- 1973 Trail Number —Alt. Two as Base—

MANAGEMENT UNIT: Snowmass Lake (INDICATOR UNIT) RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-20; Primitive-2 Useable Acres (< 30% Slope): Semi-primitive-258; Primitive-108

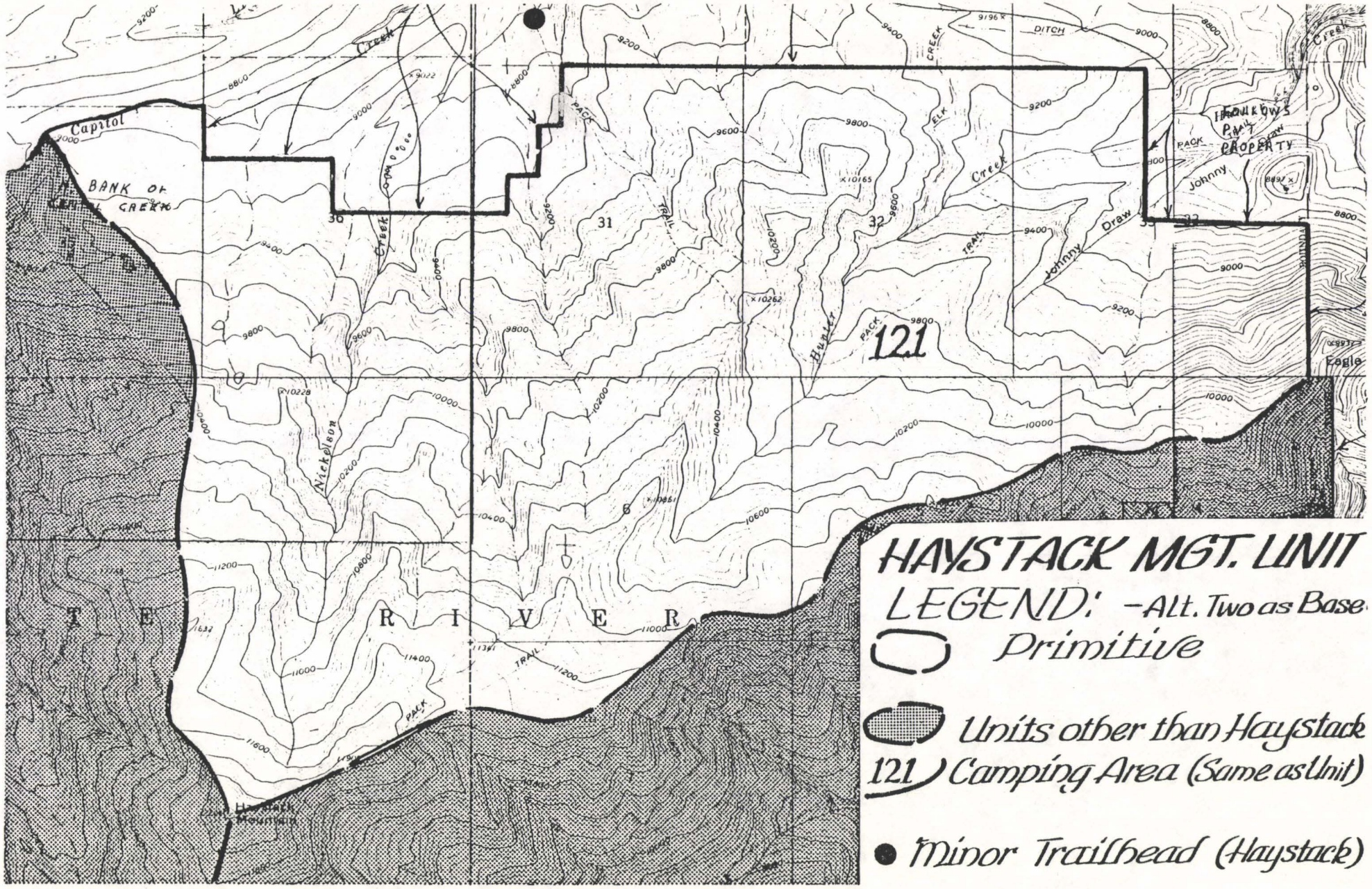
ACTIONS	TARGET DATE
Prescriptions:	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 6 day wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually
3. Locate and establish well-concealed base camp including tent platform in patrol area.	8/82
Air Quality	
4. Establish photopoint on Trailrider Pass to monitor visibility.	7/81
5. Take photos between July 1 - September 15 (see visibility monitoring guidelines in Appendix Q).	7/80 & Annually
Recreation	
6. Maintain 20 campsites in area 127 (see Appendix V, #10 and see management unit map).	7/81
7. Implement CFR order to close area within 1/4 mile of Snowmass Lake to campfires (see Appendix V, #11) and to horse parties except to pass through and for watering (see Appendix V, #12).	7/81
8. Establish two large party and/or horse use party campsites downstream (beyond 1/4 mile) of Snowmass Lake.	7/81
9. Cooperate with local mountaineering organizations to develop and implement mountain climbing management actions.	8/82
10. Complete spur trail system to Snowmass Lake and close portions of #1975 and #1973.	9/81
Monitoring/Evaluation	
11. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see Prescriptions for monitoring implementation).	9/84
12. Maintain records of number of camping groups per night between July 1 and Labor Day when possible.	6/81 & Annually


BEAR
MGNT. UNIT
LEGEND:
Pristine
Primitive
Semiprimitive
Units other than Bear
125 Camping Areas
1975 Trail Number
USING ALTERNATIVE TWO AS A BASE.
1975
125
126
Pierre Lakes
Bear Creek
Bear Creek

MANAGEMENT UNIT: Bear Creek (INDICATOR UNIT) RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Primitive-12, Pristine-1 Useable Acres (< 30% Slope): Primitive-725, Pristine-25

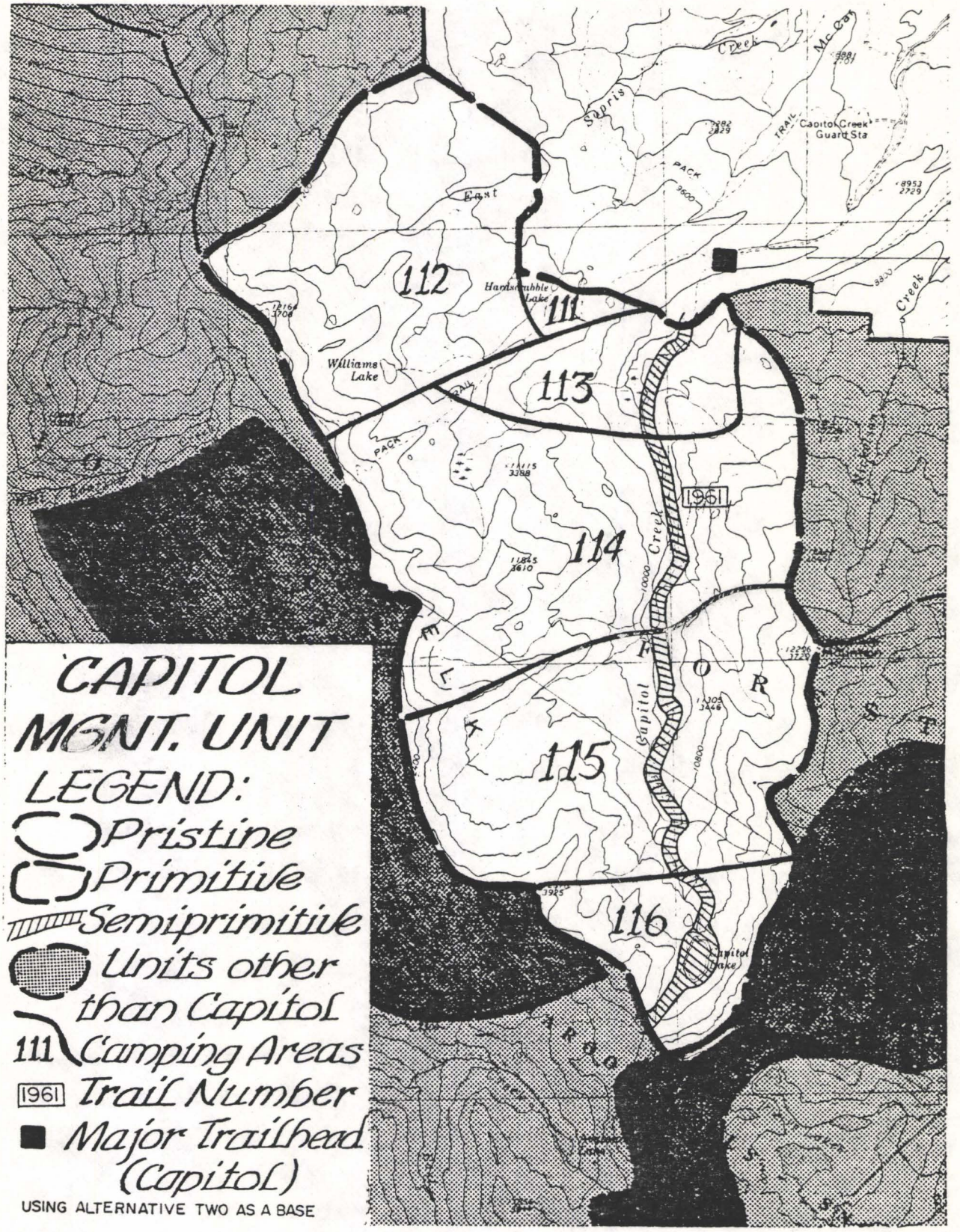
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Primitive (#4); Pristine (#5) -- See unit map.	8/80
Administration	
2. Provide up to 2 days per week of wilderness ranger coverage between July 1 and Labor Day.	7/81 & Annually
Monitoring/Evaluation	
3. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see Prescriptions for monitoring implementation).	9/84
4. Maintain records of number of camping groups per night between July 1 and Labor Day when possible.	7/81 & Annually


HAYSTACK MGT. UNIT
LEGEND: -Alt. Two as Base
Primitive
Units other than Haystack
121 Camping Area (Same as Unit)
Minor Trailhead (Haystack)
121
Capitol
BANK OF CREEK
Creek
DITCH
ELK Creek
Johnny Draw
HAWKINS PRIVATE PROPERTY
Nickelson
Hunter
TRAIL
PACK
Haystack Mountain
Eagle
T E
R I V E R
30
31
32
33

MANAGEMENT UNIT: Haystack RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Primitive-15 Useable Acres (< 30% Slope): Primitive--2292

ACTIONS	TARGET DATE
Prescription	
1. Apply Area-wide (#1); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide managerial coverage during big game seasons. Manager knowledgeable in wildlife management and law enforcement.	6/81 & Annually
Transportation	
3. Water bar and tread construction on eroded portions of trail #2187.	8/83


CAPITOL
MGNT. UNIT
LEGEND:
Pristine
Primitive
Semiprimitive
Units other than Capitol
111 Camping Areas
1961 Trail Number
Major Trailhead (Capitol)
USING ALTERNATIVE TWO AS A BASE
112
111
113
114
115
116
1961
Williams Lake
Capitol Creek Guard Sta
Capitol Creek
Capitol Lake
PACK
TRAIL

MANAGEMENT UNIT: Capitol (INDICATOR UNIT) RESPONSIBILITY: Aspen District Ranger

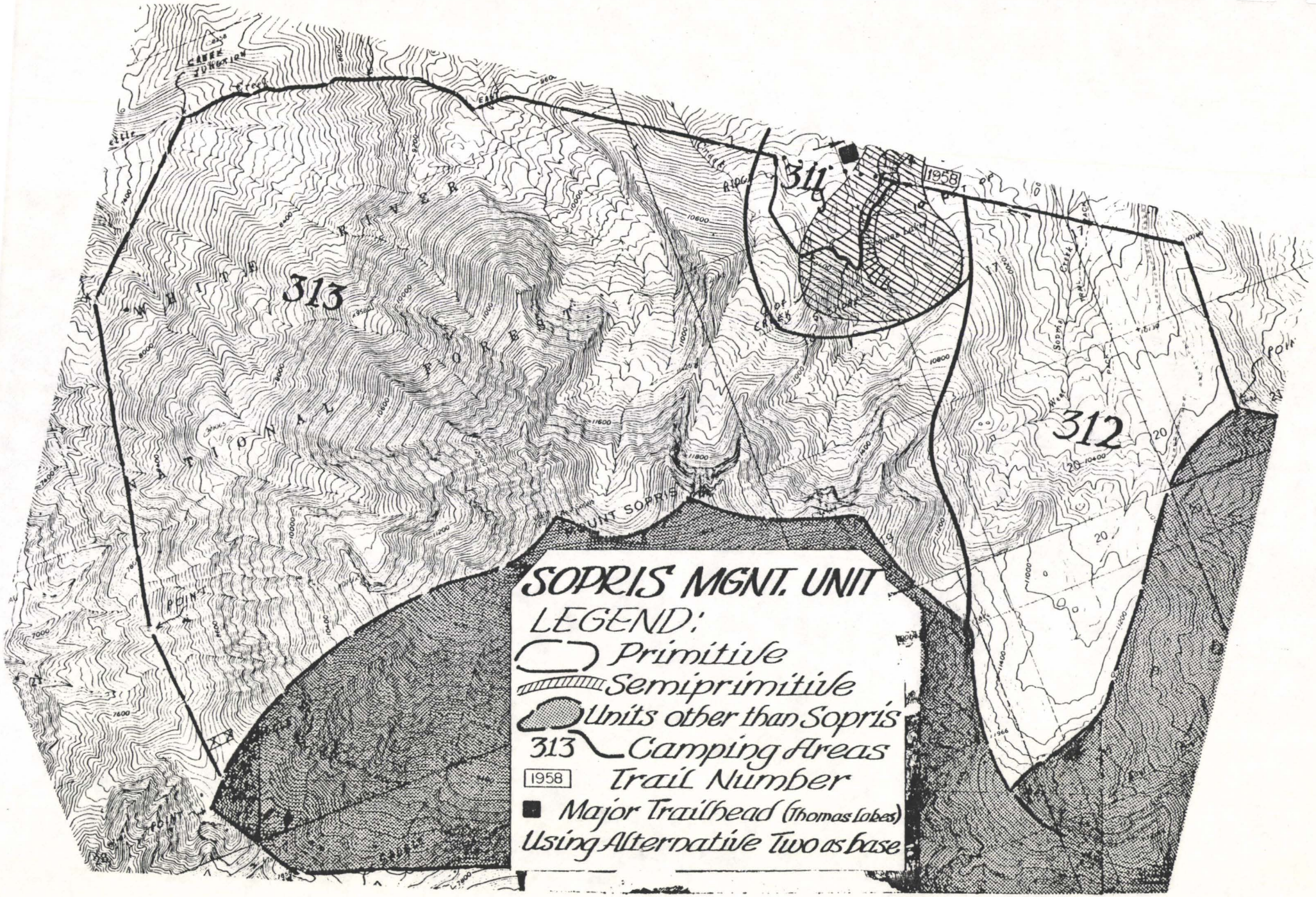
Camping GAOT: Semi-primitive-31; Primitive-7; Pristine-0 Useable Acres (< 30% Slope): Semi-primitive-292; Primitive-2801; Pristine-0

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4); Pristine (#5) -- See unit map.	8/80
Administration	
2. Provide an average of 3 days per week of wilderness ranger coverage at Capitol Lake vicinity between July 1 and Labor Day. Ranger with mountaineering skills.	6/81 & Annually
3. Provide an average of 1 day per week of wilderness ranger coverage in Williams and Hardscrabble Lake area between July 1 and Labor Day.	6/81 & Annually
4. Provide managerial coverage during big game season. Manager knowledgeable in wildlife management and law enforcement.	6/81 & Annually
Livestock	
5. Improve and maintain existing drift fence and use salting to improve livestock distribution and to reduce impact on vegetation and soils along Capitol Creek.	8/82
6. Develop plan to restore vegetation and to correct soil erosion along Capitol Creek.	8/83
Soil	
7. Develop plan to (1) correct existing deficiencies in McCabe Ditch or (2) abandon and rehabilitate land.	7/82
Transportation	
8. Improve and maintain road to Capitol trailhead for 2-wheel drive vehicles (see FSM 2323.11c).	8/81 & Annually (July 1)
9. Obliterate route along McCabe irrigation ditch.	8/82
10. Establish parking area for 15 vehicles at one time at Capitol Creek trailhead and place trailhead bulletin board (see FSM 2323.11c).	8/84
11. Reconstruct road bridge one mile below trailhead (see FSM 2323.11c).	8/81
12. Reconstruct tread and erosion control on climbing route east of Capitol Lake.	8/84
13. Maintain 4-wheel drive from Capitol trailhead to beaver ponds from Range 86 west, Township 10 South, Section 26 from July 1 to end of big game season and obliterate scattered vehicle ways outside but on periphery of MBSW (see FSM 2323.11c).	Annually 8/83
14. Repair and maintain trail corduroys along spur trail from trail #1960 to Williams Lake.	8/82
15. Reconstruct tread and erosion control on primary trails on steep slope immediately below Capitol Lake.	8/84
16. Water bar and tread construction on trail #1961 from Capitol trailhead to Capitol Creek Falls ditch.	8/84
Visual Management	
17. Reintroduce plant species common to area on trail #1961 within 1/4 mile of trailhead to reduce visual evidence of old 4-wheel drive road.	8/83

MANAGEMENT UNIT: Capitol -- continued RESPONSIBILITY: Aspen District Ranger

Camping GAOT: Semi-primitive-31; Primitive-7 Useable Acres (< 30% Slope): Semi-primitive-292; Primitive-2801

ACTIONS	TARGET DATE
Monitoring/Evaluation	
24. Identify monitoring sites relating to soil loss tolerance, water quality, and trail encounters (see Prescriptions for monitoring implementation).	9/84
25. Maintain records of number of camping parties per night between July 1 and Labor Day when possible.	7/81 & Annually


SOPRIS MGNT. UNIT
LEGEND:
Primitive
Semiprimitive
Units other than Sopris
313 Camping Areas
1958 Trail Number
Major Trailhead (Thomas Lakes)
Using Alternative Two as base
313
311
312
1958
WHITE RIVER NATIONAL FOREST
MT SOPRIS
CAMEL JUNCTION
CAMEL POINT
SOPRIS CREEK

MANAGEMENT UNIT: Sopris RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Semi-primitive-21; Primitive-12 Useable Acres (< 30% Slope): Semi-primitive-157; Primitive-1488

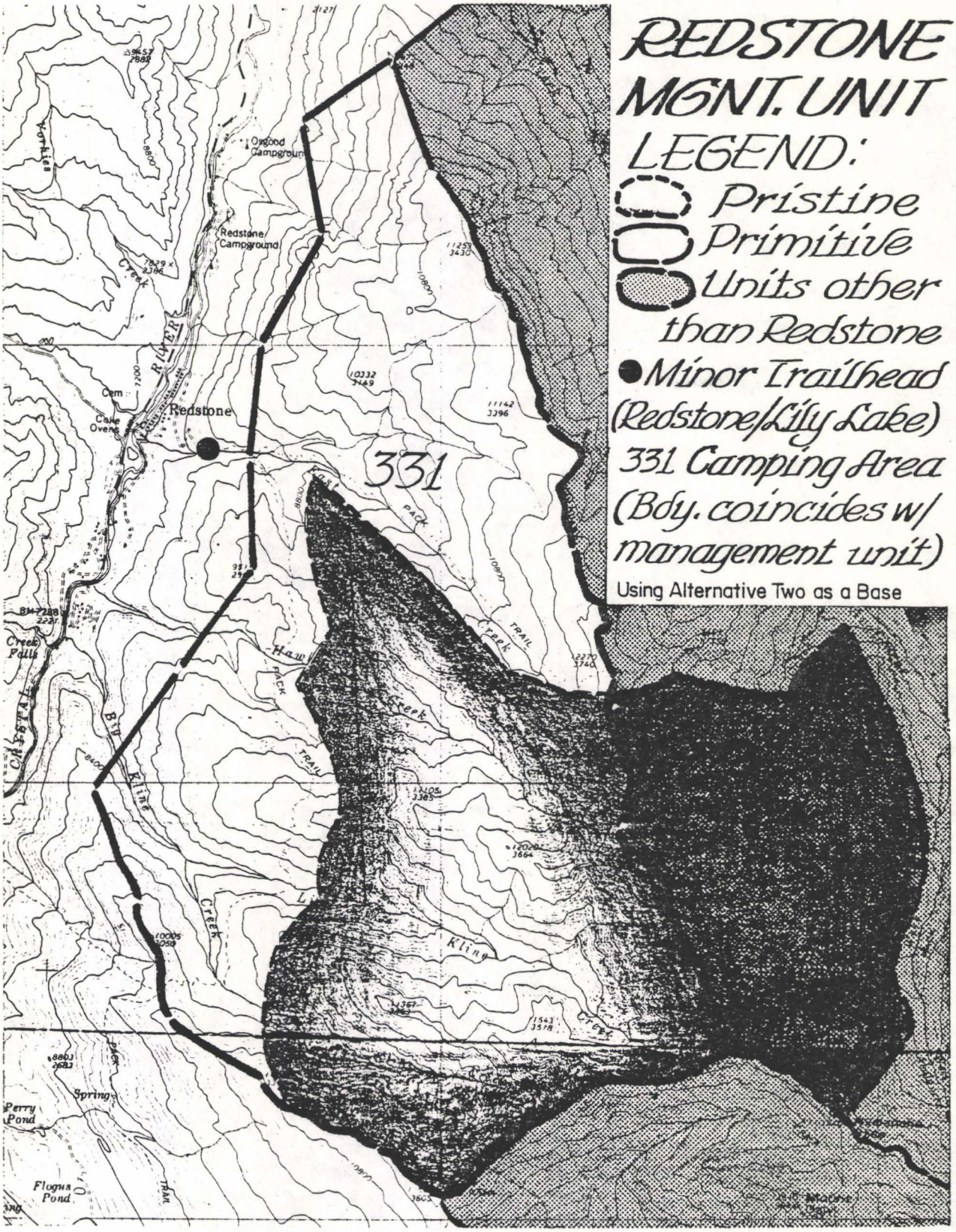
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3), Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage at Thomas Lakes between July 1 and Labor Day.	6/81 & Annually
Recreation	
3. Cooperate with local mountaineering organizations to develop and implement non-technical mountain climbing.	8/82
Transportation	
4. Inventory and assess routes to top of Mount Sopris and recommend one route. Sign and encourage (public information) use of designated route.	8/81

AVALANCHE MGNT. UNIT
LEGEND:
Pristine
Primitive
Semiprimitive
Units other than Avalanche
321 Camping Areas
Major Trailhead (Avalanche/Silver Cr.)
1959 Trail Number (Alt. Two as a Base)
321
322
323
324
325
1959
1961
Mount Rainey
Avalanche Lake
Avalanche Creek
Hall Ranger Station
Cascade Campground
Orchard Campground

MANAGEMENT UNIT: Avalanche (INDICATOR UNIT) RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Semi-primitive-35; Primitive-16; Pristine-3 Useable Acres (< 30% Slope): Semi-primitive-270, Primitive-1251, Pristine-668

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4); Pristine (#5).	8/80
Administration	
2. Provide a W.I.S. on Fridays and Saturdays at or near Avalanche trailhead between July 1 and Labor Day.	6/81 & Annually
3. Provide an average of 5 days per week of wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually
4. Provide managerial coverage during big-game hunting season.	Annually
Recreation	
5. Maintain 11 campsites in area 324 (see Appendix V, #10 and see management unit map).	8/81 & Annually
6. Cooperate with local mountaineering organizations to develop and implement mountain climbing management action.	8/82
Transportation	
7. Place directional signs at junction of trails #1959 and #1961.	8/81
8. Obliterate end on trail #1905 where it junctions with #1959.	8/81
Visual Management	
9. Correct visual impact and switchbacking above Avalanche Lake on trail #1959.	8/83
Monitoring/Evaluation	
10. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see prescriptions for monitoring implementation).	9/84
11. Maintain records of camping groups per night between July 1 and Labor Day when possible.	7/81 & Annually


REDSTONE
MGNT. UNIT
LEGEND:
Pristine
Primitive
Units other than Redstone
Minor Trailhead (Redstone/Lily Lake)
331 Camping Area (Bdy. coincides w/ management unit)
Using Alternative Two as a Base
331
Redstone
Redstone Campground
Osgood Campground
Cem
Cake Ovens
Creek Falls
Crystal
Spring
Perry Pond
Flogus Pond
Creek
Trail
Pack
Ham
Kline
Spring
Creek
Trail
Pack
Trail
Creek
Kline
Creek
Trail
Pack
Trail
Creek
Trail
Pack
Trail
Creek
Trail
Pack
Trail

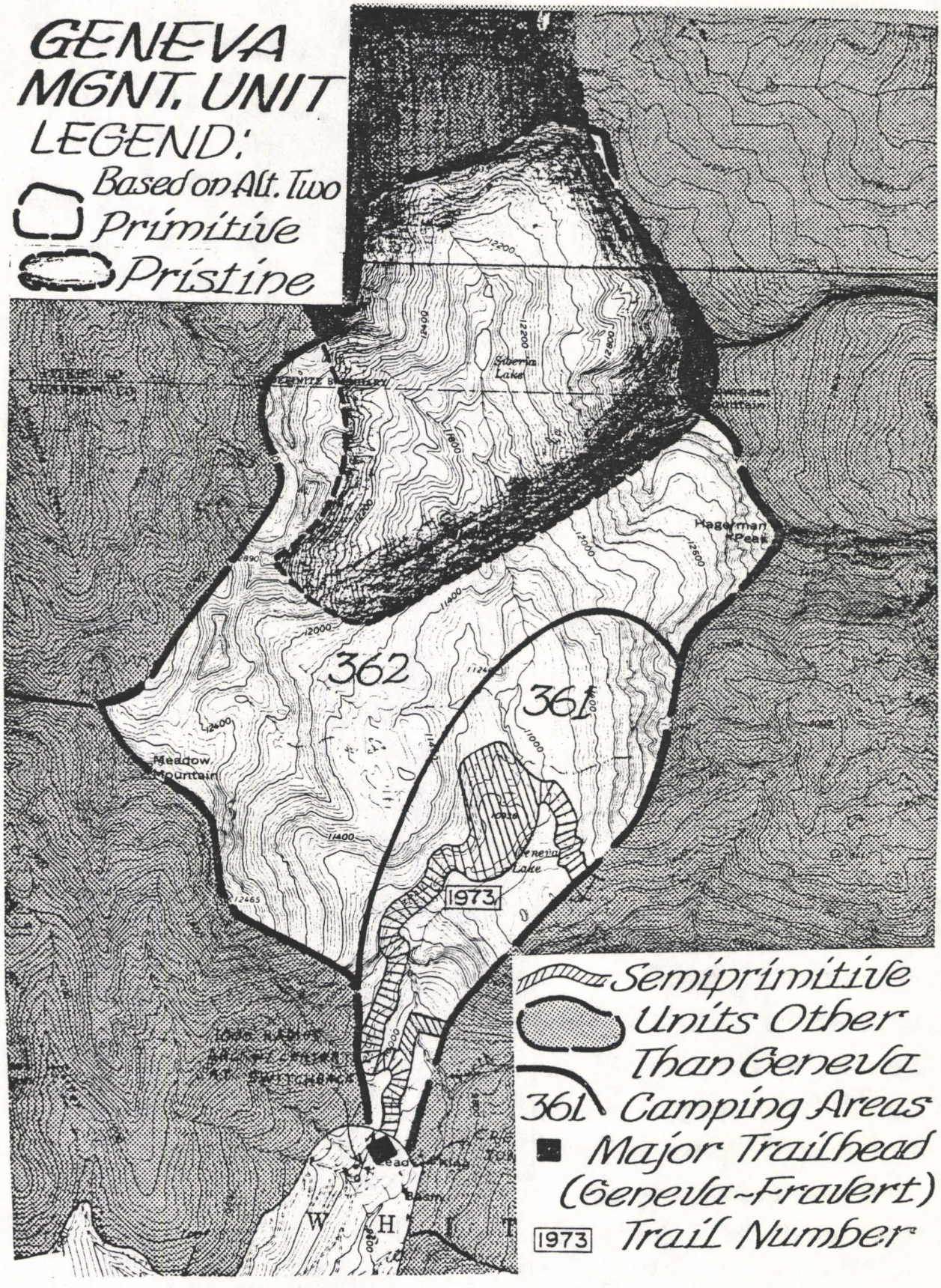
MANAGEMENT UNIT: Redstone

RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Primitive-10; Pristine-3

Useable Acres (< 30% Slope): Primitive-944; Pristine-649

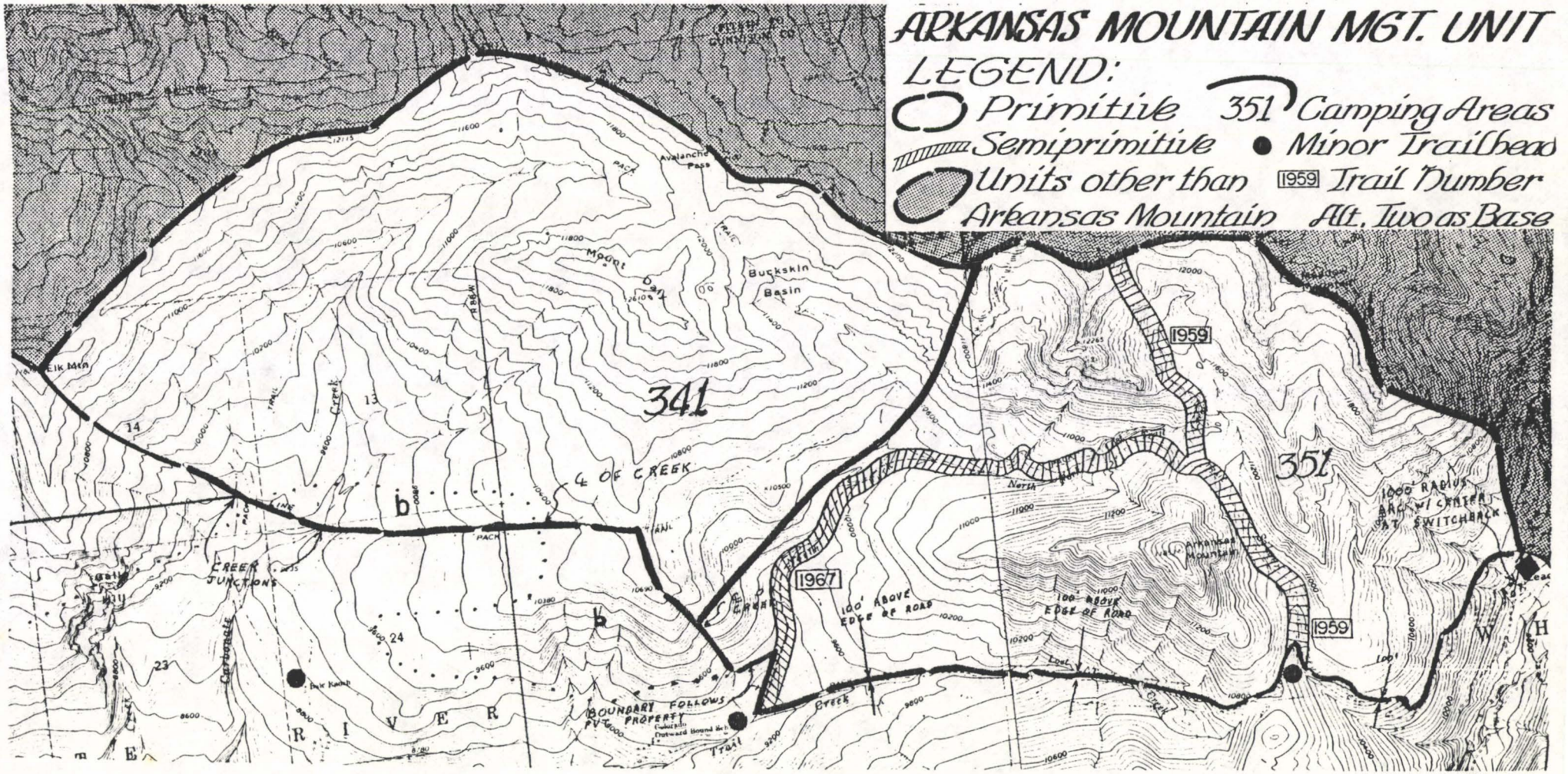
ACTIONS	TARGET DATE
Prescriptions	
1. Area-wide (#1); Primitive (#4); Pristine (#5). -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per month of wilderness ranger coverage between July 1 and Labor Day. Managerial coverage during big game season.	6/81 & Annually


GENEVA MGNT. UNIT
LEGEND:
Based on Alt. Two
Primitive
Pristine
362
361
Siberia Lake
Hagerman Peak
Meadow Mountain
Geneva Lake
1973
Semiprimitive
Units Other Than Geneva
361 Camping Areas
Major Trailhead (Geneva-Fravert)
1973 Trail Number

MANAGEMENT UNIT: Geneva (INDICATOR UNIT) RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Semi-primitive-5; Primitive-6; Pristine-4 Useable Acres (< 30% Slope): Semi-primitive-98; Primitive-304; Pristine-209

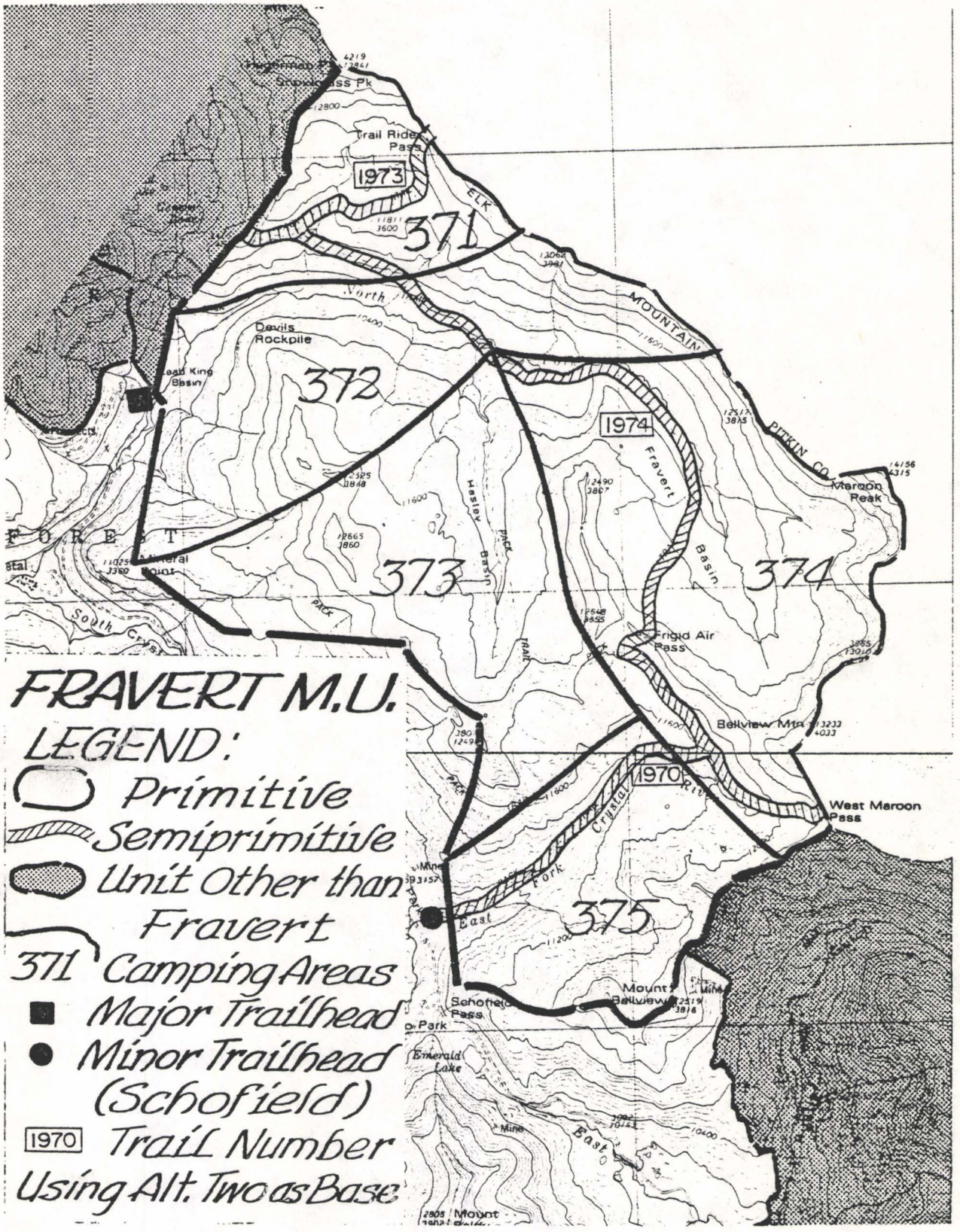
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4); Pristine (#5) -- See unit map.	8/80
Administration	
2. Provide an average of 2 days per week of wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually
Recreation	
3. Maintain 20 campsites in area 361 (see Appendix V, #10 and see management unit map).	9/81
4. Implement CFR order to close area within 1/4 mile of Geneva Lake to campfires (see Appendix V, #11).	7/81
Transportation	
5. Install directional sign at junction of trails #1973 and #1974.	7/81
6. Water bar and tread construction on eroded portions of trail #1973.	9/81
Monitoring/Evaluation	
7. Identify monitoring sites related to soil loss tolerance, water quality, and trail encounters (see prescriptions for monitoring implementation).	9/84
8. Maintain records of camping groups per night between July 1 and Labor Day when possible.	7/81 & Annually


ARKANSAS MOUNTAIN MGT. UNIT
LEGEND:
Primitive
Semiprimitive
Units other than Arkansas Mountain
351 Camping Areas
Minor Trailhead
1959 Trail Number
Alt. Two as Base
341
351
1959
1967
Buckskin Basin
Avalanche Pass
Mount
Elk Mtn
CREEK JUNCTIONS
BOUNDARY FOLLOWS PROPERTY
100' ABOVE EDGE OF ROAD
Arkansas Mountain
1000' RADIUS ARC W/ CENTER AT SWITCHBACK
RIVER

MANAGEMENT UNIT: Arkansas Mountain RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Semi-primitive-10; Primitive-10 Useable Acres (< 30% Slope): Semi-primitive-256; Primitive-683

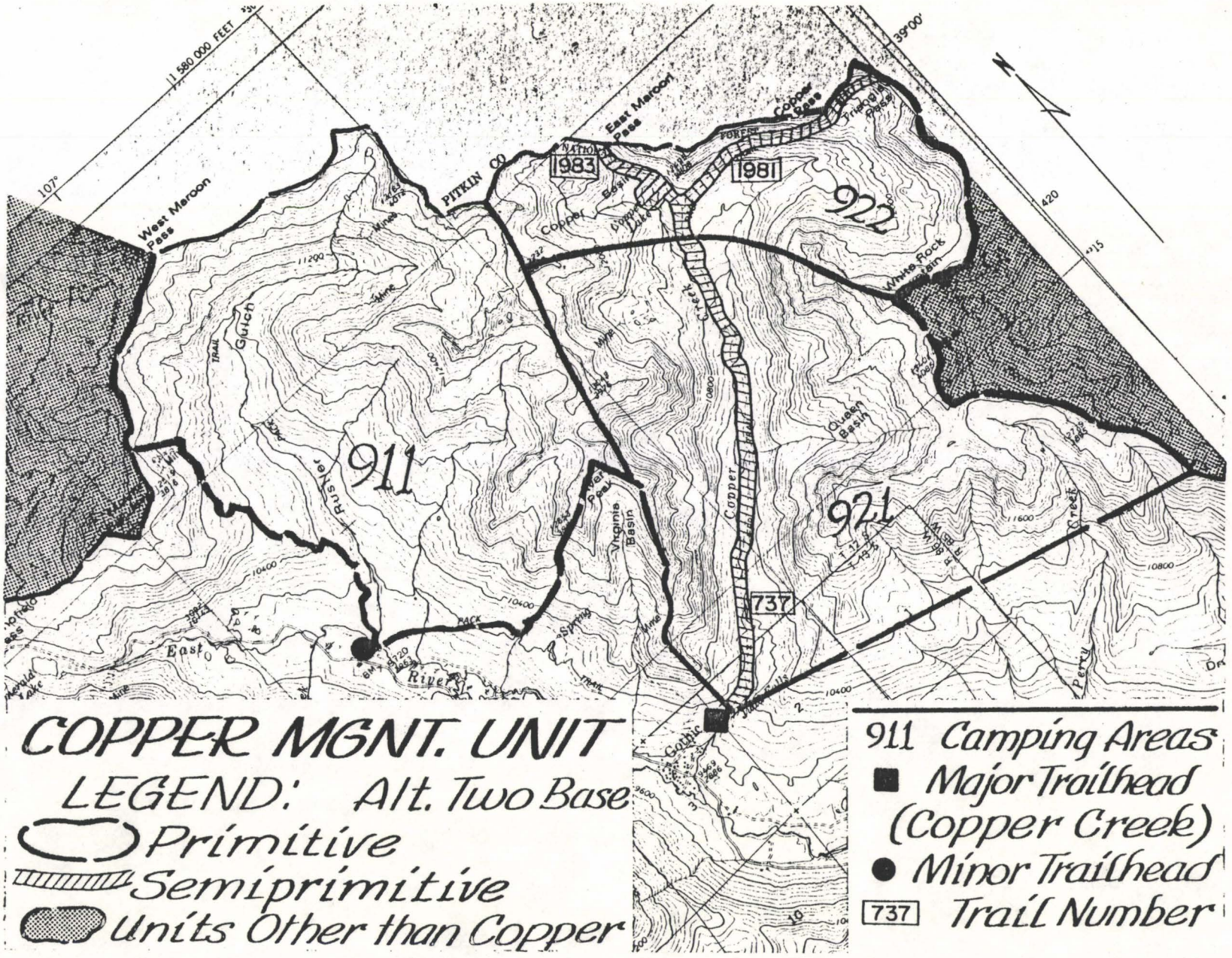
ACTIONS	TARGET DATE
Prescriptions	
1. Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage between July 1 and Labor Day.	6/81 & Annually


FRAVERT M.U.
LEGEND:
Primitive
Semiprimitive
Unit Other than Fravert
371 Camping Areas
Major Trailhead
Minor Trailhead (Schofield)
1970 Trail Number Using Alt. Two as Base
371
372
373
374
375
1973
1974
1970
Trail Rider Pass
Devils Rockpile
Mineral Mount
Fravert Basin
Frigid Air Pass
Bellview Mtn
West Maroon Pass
Maroon Peak
Schofield Pass
Emerald Lake
Mount Bellview
Crystal River
East Fork
Hasley Basin
ELK MOUNTAIN
PITKIN CO.
FOREST

MANAGEMENT UNIT: Fravert RESPONSIBILITY: Sopris District Ranger

Camping GAOT: Semi-primitive-25; Primitive-20 Useable Acres (< 30% Slope): Semi-primitive-208; Primitive-2225

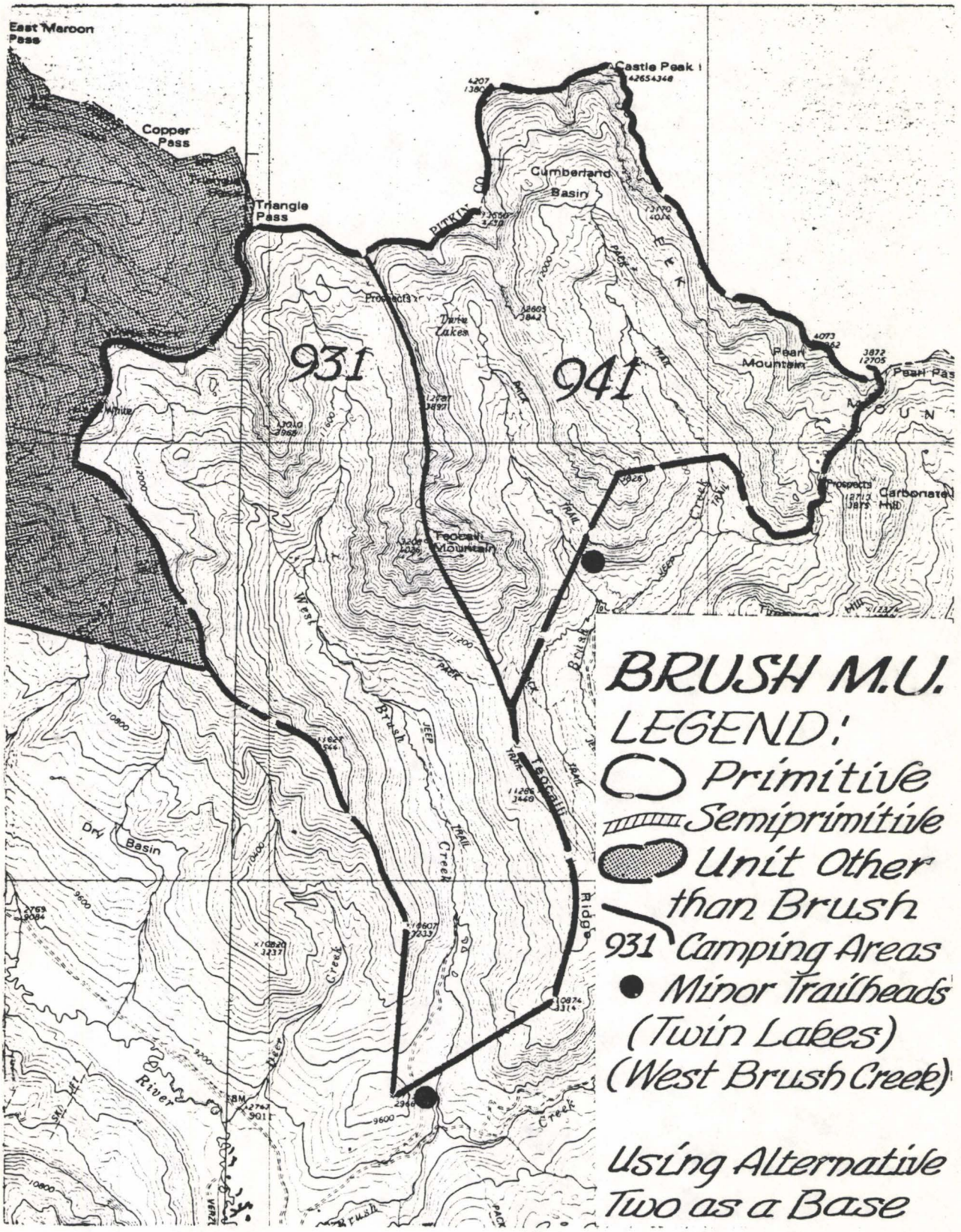
ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage between July 15 and Labor Day.	7/81 & Annually
Transportation	
3. Repair multiple trailing on trail #1973 between Geneva Lake and Trailrider Pass.	9/81


11 580 000 FEET
107°
39°00'
West Maroon Pass
PITKIN CO
East Maroon Pass
Copper Pass
Triplog Pass
1983
1981
922
911
921
737
Copper Creek
Queen Basin
White Rock Basin
Virginia Basin
Gothic
East River
Perry
911 Camping Areas
Major Trailhead (Copper Creek)
Minor Trailhead
737 Trail Number
COPPER MGNT. UNIT
LEGEND: Alt. Two Base
Primitive
Semiprimitive
Units Other than Copper

MANAGEMENT UNIT: Copper RESPONSIBILITY: Taylor River District Ranger

Camping GAOT: Semi-primitive-20; Primitive-6 Useable Acres (< 30% Slope): Semi-primitive-200; Primitive-1601

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Semi-primitive (#3); Primitive (#4) -- See unit map.	8/80
Administration	
2. Provide an average of 2 days per week of wilderness ranger coverage between July 1 and Labor Day for Copper Creek and Lake area.	6/81 & Annually
3. Provide an average of 1 day per week of wilderness ranger coverage between July 15 and Labor Day for Rustler Gulch area.	6/81 & Annually
4. Assess the need for limited motorized access from the Rustler Gulch Trailhead to Mount Bellview for mining purposes (drilling is taking place on both sides of Mount Bellview).	Annually
5. Assess the need for public and private access to private property from the Copper Trailhead along road #737.	Annually
Recreation	
6. Maintain 10 campsites in area 922 (see Appendix V, #10 and see management unit map).	7/81
7. Remove all picnic tables and metal firerings or grates.	7/81
8. Implement CFR order to close area within 1/4 mile of Copper Lake to campfires (see Appendix V, #11).	7/81
Transportation	
9. Develop a parking area for 15 vehicles at Copper Creek trailhead (#920) (see FSM 2323.11c).	9/82
10. Develop a parking area for 15 vehicles at Rustler Gulch trailhead (#910) (see FSM 2323.11c).	9/82
11. Obtain public right-of-way from RMBL for Copper Creek trail (road #739).	9/81
12. Place directional signs at junctions of (1) trail #1983 and #739, and (2) #1983 and #1981.	9/81
13. Maintain single log bridge at the stream crossings above Judd Falls near Copper Lake.	On-going


East Maroon Pass
Copper Pass
Triangle Pass
Castle Peak
Cumberland Basin
Pitkin
931
941
Prospect
Twin Lakes
Pearl Mountain
Pearl Pass
Prospects
Carbonate Hill
Peaches Mountain
West Brush Creek
Brush Creek
Jeep Trail
Teocalli Ridge
Dry Basin
Creek
River
BRUSH M.U.
LEGEND:
Primitive
Semiprimitive
Unit Other than Brush
931 Camping Areas
Minor Trailheads
(Twin Lakes)
(West Brush Creek)
Using Alternative Two as a Base

MANAGEMENT UNIT: Brush Creek RESPONSIBILITY: Taylor River District Ranger

Camping GAOT: Primitive-8 Useable Acres (< 30% Slope): Primitive-1993

ACTIONS	TARGET DATE
Prescriptions	
1. Apply Area-wide (#1); Primitive (#4).-- See unit map.	8/80
Administration	
2. Provide an average of 1 day per week of wilderness ranger coverage between July 15 and Labor Day.	6/81 & Annually

APPENDIX A

ENVIRONMENTAL ASSESSMENT

MAROON BELLS-SNOWMASS WILDERNESS

INTERIM MANAGEMENT DIRECTION

ENVIRONMENTAL ASSESSMENT

Decision Notice
and
Finding of No Significant Impact

Interim Management Direction
Maroon Bells-Snowmass Wilderness (MBSW)
Pitkin and Gunnison Counties, Colorado

USDA-Forest Service
White River and Gunnison National Forests

An environmental assessment which discusses the affects of wilderness management alternatives on the biophysical resources and social quality elements on approximately 174,329 acres of National Forest lands in the Maroon Bells-Snowmass Wilderness is available for public review at the following Forest Service office locations:

Regional Office
11177 W. 8th Avenue
Lakewood, Colorado 80225

White River National Forest
Old Federal Building
Box 948
Glenwood Springs, Colorado 81601

Gunnison National Forest
11th and Main Street
Box 138
Delta, Colorado 81416

Aspen District Office
806 West Hallam
Aspen, Colorado 81611

Sopris Ranger District
Carbondale, Colorado 81608

Taylor River Ranger District
Gunnison, Colorado 81230

This environmental assessment involves 71,329 acres of the original Maroon Bells-Snowmass Wilderness and approximately 103,000 acres which were designated additions to the Maroon Bells-Snowmass Wilderness by P.L. 96-560 in December 1980. This entire area of 174,329 acres is referred to as the MBSW.

Based on the analysis and evaluation described in the environmental assessment, it is my decision to adopt alternative #2. Alternative 2, with the enclosed Interim Direction for the MBSW, provides adequate environmental protection to the wilderness resources within a feasible managerial cost. This alternative maintains present use trends while protecting wilderness biophysical resources and social quality elements in the MBSW through the use of interim direction. It provides for a variety of quality wilderness opportunities through the use of the recreation opportunity spectrum (ROS). Unavoidable effects associated with total recreation use will remain at acceptable levels. Present use levels and travel patterns are not significantly changed, (except for redistribution of camping in impacted areas) facilitating implementation of the preferred alternative. This alternative can be accomplished within feasible manpower levels and specific management actions in impacted areas.

Other interim direction alternatives analyzed were (1) Emphasize Transition and Semiprimitive opportunities to maximize use; (3) Emphasize Primitive and Pristine opportunities which increase the protection level for biophysical resources in specific heavily used sites and provides for increased opportunities for primitive recreation and solitude over alternative #2. This would result in a 10 to 15 percent reduction in recreation visitor days. Alternative 3 is considered to be the environmentally preferred alternative as it has the least impact on the biophysical and human environments; and (4) Maximize the amount of Primitive and Pristine opportunities in the analysis area to reflect the current potential capability of the area to provide this mix of opportunities. This would result in an estimated reduction of 40-60 percent in annual recreation visitor days. This alternative would require increased manpower to administer the use limiting permit system required to implement this highly restrictive alternative.

A no action alternative was also considered. This alternative would not include an interim direction for the wilderness, nor would it take corrective action in areas where site capacities are currently exceeded and biophysical resource degradation is occurring. The no action alternative would allow continuation of the downward trend in biophysical and social resources.

Alternatives 1, 3, and 4 would all require more than double the manpower and administrative cost required for alternative 2. Alternatives 2 and 3 each provide for implementation of a use limiting permit system if other management actions fail to adequately protect the biophysical resources and opportunities for solitude.

I have determined, based on the environmental analysis, that Alternative 2 is not a major Federal action that would significantly affect the quality of the human environment; therefore, an environmental impact statement is not needed.

Implementation may take place immediately. This decision is subject to administrative review (appeal) pursuant to 36 CFR 211.19. The 45-day period for administrative review begins with the date of this decision. Written comments should be sent to any of the Forest Service offices listed on the previous page.

_____ _____

CRAIG W. RUPP
Regional Forester

Date

Summary

Interim Management Direction
Maroon Bells-Snowmass Wilderness (MBSW)
Pitkin and Gunnison Counties, Colorado
USDA Forest Service
White River and Gunnison National Forests

This environmental assessment evaluates the environmental and social effects of alternatives for managing the approximately 174,329 acres of the Maroon Bells-Snowmass Wilderness. During the analysis, specific issues and concerns were identified, and opportunities for management identified. The decision to be made consists of deciding among four management alternatives, each of which provided different levels of acceptable quality for the wilderness social quality elements. Biophysical resource quality is maintained at acceptable levels in all alternatives throughout the wilderness. Each alternative was rated by the following evaluation criteria:

1. The alternative must be feasible.

2. Protects wilderness biophysical resources.

3. Provides for and administers those uses or activities authorized in the Wilderness Act of 1964.

4. Provides for a variety of quality wilderness recreation and solitude opportunities.

The alternatives analyzed consisted of (see also Section IV of this Environmental Assessment):

1. Emphasize opportunities for recreation use.

2. Maintain current use levels and activities, but taking corrective action in areas where biophysical resource conditions and social quality elements are on a downward trend.

3. Emphasize opportunities for solitude and primitive recreation and other activities in a natural setting.

4. Maximize opportunities for solitude and primitive recreation and other activities in a natural setting.

A no action alternative was also analyzed, but was dropped from consideration. Unlike the four alternatives above, it did not call for the development of interim management direction, the use of the recreation opportunity spectrum, or incorporation of capability area management. Consequently, it could not protect wilderness biophysical and resources and social quality elements from their present downward trend in certain popular areas.

The Maintain Current Use alternative (#2) was selected as the Forest Service preferred alternative because it:

1. Provides for corrective action in areas where biophysical resources and social quality elements are on a downward trend.

2. Maintains an acceptable quality of wilderness biophysical resources and opportunities for primitive recreation in a natural setting.

3. Does not significantly affect the current levels of existing use.

As a result of selecting alternative 2, Interim Direction for the MBSW was developed which:

1. Will implement the allocation decision described in alternative 2.

2. Prescribes management actions designed to be responsive to the issues, concerns, opportunities for management and mitigation measures identified in this Environmental Assessment.

TABLE OF CONTENTS

Page

SUMMARY i

I. INTRODUCTION 1

A. Purpose. 1
B. Background information (Need) 1
C. Description of the Area and Current Situation. 2
D. Issues, Concerns, Opportunities for Management 2

II. AFFECTED ENVIRONMENT 8
A. Administration 8
B. Air Flights. 8
C. Air Quality. 9
D. Capability Areas 9
E. Cultural Resources 10
F. Fire 10
G. Fish and Wildlife. 10
H. Insect and Disease 11
I. Livestock. 11
J. Minerals 11
K. Non-Federal Lands. 13
L. Public Information 13
M. Public Safety. 13
N. Recreation 14
O. Research and Education 15
P. Transportation System. 16
Q. Endangered and Threatened Species. 17
R. Visual Resources 17
S. Water Quality. 18

III. EVALUATION CRITERIA. 18

IV. ALTERNATIVES CONSIDERED. 19
1. Alternative #1--Emphasize Opportunities for Recreation Use. 20
2. Alternative #2--Maintain Current Use Trends and Activities in Harmony with Biophysical and Social Elements . .20
3. Alternative #3--Emphasize Opportunities for Solitude and Primitive Recreation and Other Activities in A Natural Setting. 21
4. Alternative #4--Maximize Opportunities for Solitude and Primitive Recreation Use and Other Activities in a Natural Setting. 21
5. No Action. 21

Page

V. EFFECTS OF IMPLEMENTATION . . . . . , 22
A. Alternative #1. 22
B. Alternative #2. 22
C Alternative #3 23
D. Alternative #4. 24
E. Alternative #5. 24
F. Comparison of Alternatives. 25

VI. EVALUATION OF ALTERNATIVES. 26

VII. CONSULTATION WITH OTHERS. 35

VIII. CONTRIBUTORS. 36

I. INTRODUCTION

A. Purpose

The Environmental Assessment analyzes the environmental and social impacts of alternative interim management directions for the Maroon Bells-Snowmass Wilderness, and documents the process used to develop allocation of solitude and primitive recreation opportunities in the wilderness.

As a result of the allocation decision, Interim Direction for the MBSW has been developed. The interim direction will provide for acceptable levels of use of wilderness resources to ensure perpetuation of wilderness resource conditions for present and future generations. It provides a uniform and systematic framework for managing the wilderness. Specifically, the Interim Management Direction:

1. Provides for management by goals and objectives.

2. Defines levels of acceptable recreation use for specific wilderness management areas.

The interim direction will be in effect from the date the Decision Notice is signed until the White River and Grand Mesa, Uncompahgre, and Gunnison National Forest Land and Resource Management Plans are implemented.

B. Background Information

The need for a change in management direction for the MBSW has become evident over the past several years because of the increased use as described under the current situation. On May 12, 1978, the Maroon Bells-Snowmass Recreation Demonstration Areas were established through a cooperative effort by the White River and Gunnison National Forests, Rocky Mountain and Intermountain Research Stations, Colorado State University, Department of Recreation Resources (CSU) and the Rocky Mountain Regional Office. While the Demonstration Area encompassed nearly 500,000 acres and both wilderness and nonwilderness NF areas, initial analysis was concentrated on the wilderness which makes up the core of the area. A purpose of the analysis was to assess alternative management direction for resolving emerging resource and recreation experience degradation problems in the MBSW and provide an interim management direction which would serve as a guide for long range wilderness management in National Forest Land and Resource Management Plans. An additional purpose was to allow the transfer of current recreation research technology, specifically to apply the best available technology for wilderness and dispersed recreation planning and management; further develop and refine that technology; and monitor and evaluate the implementation of that technology.

In January 1979 the Regional Forester directed that interim direction be developed for each wilderness and primitive area in the Region. Such direction would address critical issues and concerns about specific wilderness conditions (FSM 2322.1 R-2 Supp #76). This interim direction is to cover the time period proceeding the implementation of the Forest Land and Resource Management Plans.

The analysis utilizes the Recreation Opportunity Spectrum (ROS) concept. As applied to wilderness management, the spectrum recognizes the existence of four basic wilderness recreation and solitude opportunity areas: transition, semi-primitive, primitive, and pristine. These areas provide different types of wilderness opportunities, with the transition areas having the relatively lowest values for solitude and primitive recreation attributes and pristine areas the highest (see Interim Direction for the MBSW, Section IV, pgs. 10-13).

C. Description of the Area and Current Situation

The 174,329-acre MBSW is located in the Elk Mountain Range of the Colorado Rockies and is near the following communities: Aspen/Snowmass, Carbondale, Redstone, Marble, and Crested Butte (see Figure 1-Section 1, p.).

The area consists of alpine and subalpine mountainous terrain which ranges from below 8,000 feet in elevation to over 14,000 feet. The growing season is short. Vegetation is fragile and slow to heal once damaged. The wilderness is habitat for wildlife species such as deer, elk, and bighorn sheep. Travel in this area presents hazards to the visitor during all seasons of the year due to rapid changes in the weather. Winter travel is especially hazardous due to extreme cold and avalanches.

The MBSW was first recognized for its wilderness attributes in 1933 when it was designated as a Primitive Area under Regulation L-20. The name was changed from Primitive Area to Wild Area in 1956 and to Wilderness with the passage of the Wilderness Act in 1964. Today the Maroon Bells-Snowmass Wilderness is one of the most intensively used wildernesses in the Rocky Mountain Region. Use is concentrated in a small percentage of the MBSW, along trails, at popular destinations and campsites (see Recreation Survey Data in Appendix D and Wilderness Simulator Data in Appendix O). The biophysical elements in several concentrated use areas are deteriorating. Opportunities for solitude and primitive recreation are also decreasing due to increased recreation use. The rest of the MBSW, which receives relatively little use, is in excellent condition.

D. Issues, Concerns, Opportunities for Management

The Forest Service, using comments received from public meetings, and from formal research interviews, questionnaires and observations done by Colorado State University and the Recreation Research group at the Rocky Mountain Forest and Range Experiment Station, developed the following list of issues, concerns, and management opportunities.

1. Management direction among the Aspen, Sopris, and Taylor River Districts should be consistent and coordinated.

Opportunities for Management

a. Hire a wilderness coordinator

b. Conduct coordination meetings among Districts.

c. Develop specific policy for managing the biophysical resources and social elements in the MBSW.

2. Levels of acceptable social and/or biophysical impacts are being exceeded at Maroon/Crater Lake area, Snowmass Lake area, Conundrum Hot Springs Area, and to a lesser extent at Geneva and Capitol Lake areas. The Maroon/Crater and Snowmass Lake areas were the most frequently mentioned areas that were perceived to be too crowded (see Recreation Survey Data and Wilderness Simulator Data in Appendices D and O, respectively).

Opportunities for Management

a. Discourage and disperse use in identified areas.

b. Develop specific standards and policies which enable biophysical and social elements to be monitored and protected.

c. Implement a use limiting permit system.

d. Require use of Forest Service designated campsites near heavy use areas.

e. Avoid identifying wildlife habitat areas to the public to minmize wildlife harassment.

f. Provide a water quality monitoring system to determine when water quality is approaching unacceptable quality as a result of human activity.

g. Limit party size.

h. Relocate travel routes to avoid critial wildlife habitat areas.

i. Continue current use patterns.

j. Prohibit camping at heavily used areas and require camping at designated sites well removed from bodies of water.

3. Most visitors surveyed expressed concern about larger parties and recommended that party size be restricted to approximately 10 people and 10 horses (see Recreation Survey Data in Appendix D, also Appendix W). Currently, no more than 10 people and 10 horses are allowed in a party. This restriction affects 2 percent of all wilderness parties.

Opportunities for Management

a. Require large parties (of more than 10 people and 10 horses) to obtain special use permits which designate travel routes and camp sites.

b. Continue present practice.

c. Prohibit all large parties.

4. Wilderness visitors desire more information and education materials relating to the trail system maps, rules and regulations, low impact use, and the flora, fauna, and geology of the area (see Recreation Survey Data in Appendix D).

Opportunities for Management

a. Identify for the public local sources of information which meet the needs of visitors and Forest Service management.

b. Provide or develop Forest Service publications for information which local sources do not supply.

c. Conduct coordination meetings with local citizens, organizations, businesses and local government to coordinate content and distribution of public information on the MBSW.

d. Provide appropriate trailhead information in a short and easy to read fashion.

e. Consistently use newspapers, radio and other forms of mass media communication.

f. Provide users with information regarding the presence of Giardia and other water borne organizums and the proper treatment and precautions to date.

5. Fatalities and injuries (particulary related to mountain climbing) are occurring each year.

Opportunities for Management

a. Inform the public of the naturally occurring hazards of the mountain environment and how to cope with them.

b. Provide specific information regarding the skill level of the climbs (routes) involved (i.e., class 3, 4, 5, etc.).

c. Prohibit climbing on certain peaks or require that permits be obtained.

d. Continue current practice.

6. Unrestrained dogs are disturbing (e.g., barking, scaring, chasing) wilderness users, wildlife, and livestock.

Opportunities for Management

a. Continue present leash requirement regulations and policy.

b. Designate areas where dogs are allowed and areas where dogs are prohibited.

c. Prohibit all dogs from the MBSW except dogs used with management of livestock.

7. Low-level air flights are disrupting wilderness user solitude, particularly at East Maroon Creek Pass where numerous daily Aspen/Crested Butte commercial flights occur.

Opportunities for Management

a. Inform the flying public of the need for solitude over the MBSW.

b. Distribute a message to pilots in local airports asking them to use flight routes which do not pass over the planning area.

c. Work with the FAA to establish local commercial routes which avoid wilderness.

8. Recreation users object to livestock grazing in the vicinity of trails or camp areas.

Opportunities for Management

a. Inform wilderness visitors that livestock grazing is taking place and is a legitimate use of wilderness.

b. Route livestock around popular recreation areas during heavy recreation use periods when permitted livestock use will not be adversely affected.

9. Conundrum Hot Springs is attracting users and causing the level of acceptable social and biophysical impacts to be exceeded.

Opportunities for Management

a. Determine if the cabin at the Conundrum Hot Springs qualifies for nomination to the National Register of Historic Sites and/or Historic Structures.

b. Develop camping carrying capacities for the Conundrum management unit which are based on the capacity of the Hot Springs pools.

c. Keep dogs and stock away from the Hot Springs pools.

d. Close the area to camping.

e. Restrict camping to designated sites only.

f. Prohibit bathing in the Hot Springs pools.

g. Prohibit nude bathing in the Hot Springs pools.

h. Remove part or all of the human constructed facilities and restore the area to a natural-appearing site.

i. Relocate the trail to avoid the Hot Springs area.

j. Close trailhead parking facilities to reduce availability of use.

10. Campfires within the MBSW and future industrial developments (particularly in the Rifle and Crested Butte areas) may degrade mandatory Class I Clean Air Standards of the Maroon Bells-Snowmass Wilderness.

Opportunities for Management

a. Continue monitoring air quality through photopoints.

b. Close areas to open fires where campfires smoke is objectionable to users.

c. Inform potential sources of industrial pollutants of the air quality standards established for the Maroon Bells-Snowmass Wilderness.

d. Continue current policy and regulations concerning open fires.

e. Prohibit all open fires except natural fires.

f. Identify critical air sheds and restrict or prohibit open fires.

11. Recent activity in filing mining claims in the Conundrum and Copper management units could lead to intensive mineral activity.

Opportunities for Management

a. Closely monitor all management units for possible unauthorized mineral activities.

b. Make mineral examinations of mining claims to determine their validity.

c. Develop criteria and procedures to accommodate mineral exploration with minimum impact on wilderness resources in management units with known mineral resource potential.

d. Closely monitor on-going mineral exploration projects when authorized.

12. Activities occurring on non-Federal lands in the MBSW and access to those lands have the potential to degrade wilderness biophysical and social elements, especially in the Conundrum and American/Cathedral management units.

Opportunities for Management

a. Acquire non-Federal lands through appropriate acquisition programs on an availability and a priority basis.

b. Acquire a right-of-way where an access problem exists and where land acquisition is not feasible or appropriate.

c. Contact known landowners and work out mutually advantageous memorandums of agreement on management of respective adjacent lands. Include such things as fire control, insect and disease control, acceptable use by the general public, uses to be restricted, visual quality objectives, access for management or resource utilization and other appropriate items.

13. Suppression of insects, disease outbreaks, and naturally occurring fire will lead to modification of natural processes.

Opportunities for Management

a. Develop fire, insect and disease management plans which provide the opportunity for natural processes to occur inside the wilderness and without adversely affecting lands outside and vice-versa.

b. Train wilderness rangers to recognize insect and disease outbreaks throughout the wilderness that appear to be beyond the endemic stage. Have these areas checked by insect and disease specialists to ascertain their cause and significance. Specific recommendations for treatment or monitoring should then be made.

c. Continue current passive management of insect and disease.

14. Research and educational activities need to be coordinated with Forest Service management to protect wilderness biophysical resources and social elements.

Opportunities for Management

a. Require all proposed research or study projects to be reviewed by Forest Supervisor and Rocky Mountain Forest and Range Experiment Station for appropriateness and benefit to wilderness management needs.

b. Prohibit research or educational programs that can be accomplished outside the wilderness or have no obvious benefit to management or interpretation of the area.

c. Allow all proposed study or research projects to occur.

d. Allow all proposed study or research to occur only with the written consent of the Forest Supervisor.

e. Invite specific study or research projects which will aid in the estabishment of biophysical and social limits of acceptable use.

II. AFFECTED ENVIRONMENT

This section describes the impacts of current use to components (physical, biological, and social) of the environment. It provides current information related to issues and concerns under a series of topics.

A. Administration

Forest Service jurisdiction is presently divided among three Ranger Districts and two National Forests. The Taylor River District has jurisdiction over the southern most section of the wilderness (the Copper and Brush management units) and is on the Gunnison National Forest. The Sopris District administers the western most section (the Sopris, Avalanche, Redstone, Arkansas Mountain, Geneva, and Fravert management units) and the Aspen District manages the remaining portion. Both the Sopris and Aspen Ranger Districts are on the White River National Forest.

Camping groups at one time, trail encounters, and camp encounter capacities have been established for the wilderness. By Snowmass Lake, Crater Lake, and to a lesser extent the Conundrum Hot Springs, Geneva Lake, and Capitol Lake, areas are being used beyond their capacities (see Appendices D and O).

Facilities, including constructed bridges, single log bridges, signs, a toilet, and a corral are scattered in the area. Toilet and corral facilities are set up by unknown private citizens and are scheduled for removal. The other facilities were set up by the Forest Service.

On-the-ground administration of the wilderness is accomplished mainly through the wilderness ranger program. Wilderness rangers contact the public, perform routine trail maintenance, keep assigned areas free of litter, establish and administer designated campsites, and remove undesirable ones. They currently have the responsibility for enforcing regulations, but many do not have the training and hence the authority to issue violation notices.

B. Air Flights

Airspace above the MBSW is under the control of the FAA. Aircraft using this airspace comply with either instrument Flight Rules (IFR) or Visual Flight Rules (VFR) that govern altitudes and routes depending upon weather conditions.

IFR flight rules require a pilot to select a nationally published IFR airway and comply with established minimum altitude and route requirements. These airways are selected to provide safe and efficient air travel between different states and cities. The number of IFR overflights is not available. Altering IFR airways to meet wilderness solitude needs would be difficult due to FAA jurisdiction and air safety needs.

Aircraft on VFR flight plans have no minimum altitude requirements and are not restricted to any particular routes through the area, weather permitting. All VFR aircraft passing over the planning area have some effect on visitor solitude, but it is the low level flights bound for Aspen or Crested Butte which have the greatest effect.

Limitations to aircraft use in the wilderness are covered in regulations and FSM 2320.3 and 2326 (36 CFR 293.6). Regulations prohibit aircraft from landing and advise aircraft to maintain a 3,000 foot altitude above wilderness. Approximately 1,460 aircraft using VFR land at Aspen and Crested Butte per week. Currently, low level (1,000-2,000 above the ground) VFR aircraft are affecting opportunities for solitude in the East Maroon, Snowmass, Avalanche, and Copper Management Units.

C. Air Quality

The Maroon Bells-Snowmass Wilderness is under Class I Clean Air Standards. This classification permits only a minor increase in pollution above base levels, although base levels have not yet been established by the Environmental Protection Agency.

The air over the wilderness is generally free of man-made pollutants. Pollution from motor vehicles and/or chimney smoke can be seen over the Glenwood Canyon-Glenwood Springs area from inside the wilderness. Campfire smoke reaches objectionable levels at Snowmass Lake. Potential air pollution problems might arise from oil shale developments in the Rifle area and from molybdenum mining in the Crested Butte area.

Visibility is currently being monitored from photopoints inside the wilderness.

D. Capability Areas

Capability areas are tracts of land defined by four variables: vegetation, landform, soil, and water. These areas have been mapped for the MBSW on 7 1/2 degree U.S.G.S. Quadrangle Maps and are available from the White River National Forest Supervisor's Office. They aid in managing the wilderness biophysical resource and social elements. The capability areas defined for the planning area are as follows:

Alpine	Mountain Brush
Aspen	Mountain Grassland
Douglas-fir	Spruce-Fir
Lodgepole Pine	Valley Bottom
Mixed Vegetation	

Alpine, Aspen, and Valley Bottom are the most sensitive to human activities of the nine capability areas (see Capability areas in Appendix K for a more detailed description of the capability areas and their limitations).

Within each capability area, landform and soils have been ranked for Geologic Failure Risk. This is the risk of some type of mass movement occurring as a result of a major activity taking place on the land. The three geologic failure rankings include:

None to slight hazard
Moderate hazard
Severe hazard

Capability areas are useful in projecting impacts in initial planning stages for major activities (as trail construction). More intensive site-specific studies involving soil and hydrology factors are also helpful.

E. Cultural Resources

The State Historic Preservation Officer (SHPO) and the State Archaeologist have identified only one cultural site in the planning area, the Conundrum Hot Springs pools and cabin. The SHPO considers both sites eligible for nomination to the National Register of Historic Places. To date they have not been nominated as their significance is not resolved in the interim management direction. Cultural resource inventories are yet to be completed. Potential sites are inventoried as they are identified and a Level I Cultural Resources Inventory (overview) is to be completed for the White River Forest and Resource Management Plan.

F. Fire

The MBSW is characterized as having a limited fire potential, due primarily to topography, fuels, and weather. The area is dissected by high mountains and ridge tops which extend well above tree line. This topography usually confines fires to single drainages. Long-range fire spotting over these ridge tops is conceivable only under the most severe burning conditions. The continuity of coniferous stands is not conductive to supporting large fires. Frequent precipitation, a short fire season, and a heavy snowpack persisting into late June or early July further restrict fire potential.

Examination of available fire records reveals that fires have been few and characteristically small for the past 50 to 60 years. Fuel inventories indicate that excessive build-up problems do not currently exist. However, if present suppression policies remain in effect, hazardous fuel situations could be expected in the future. Natural fires under prescription should help prevent this from occurring.

Lightning and man-caused fires have occurred sporadically over the MBSW with the majority of man-caused fires occurring in and around the heavily used areas of Crater Lake and Snowmass Creek.

G. Fish and Wildlife

The MBSW encompasses a wide variety of habitats and wildlife species (see Appendix L for Species List). The Colorado Division of Wildlife manages the fish and wildlife populations and the Forest Service manages the habitat. The major tools available for Forest Service management of habitat are:

1. Control over the type, number, and distribution of wilderness visitors and livestock.

2. The prescribed fire program (see Fire Management Plan) aids to preserve natural habitat diversity.

3. Determining waters to be stocked with fish and type of fish stocked.

Important wildlife habitat (elk, deer, and bighorn sheep) is located on the ridge between Conundrum and East Maroon Creek and in the Willow, Haystack, Capitol, and Redstone Management Units. There are no known critical habitats for threatened or endangered species.

H. Insect and Disease

Spruce-fir and aspen are the major vegetation types affected by insect and disease. Spruce-fir is subject to attack by the spruce beetle and spruce-fir broom rust. Aspen is very susceptible to mechanical injury and subsequent infection by canker and decay fungi. Campsites should therefore be located away from aspen stands.

I. Livestock (Figure U-1 in Appendix U)

Livestock grazing is a valid use of wilderness as stated in the Wilderness Act. It occurs throughout the planning area and includes:

1. Cattle and Horse Allotments (C/H)--allotments used primarily for cattle grazing (see Table 1).

2. Cattle and Horse Recreation Transportation Allotment (T)--allotments used primarily for pack and saddle stock (see Table 1).

3. Sheep and Goat Allotments (S/G)--allotments used primarily for sheep and goat grazing (see Table 1).

Domestick livestock use of allotments are managed through grazing permits administered through the Forest Service. Problems or conflicts are handled through the allotment plan which is prepared along with the permit. A conflict exists between livestock use and recreation use. Many recreationists do not like to see livestock use occurring in the MBSW.

Domestic livestock grazing in the MBSW has significantly reduced in recent years because many permittees have taken nonuse by personal preference, gone out of business, or voluntarily given up their permits. There are no areas of overuse within the wilderness.

J. Minerals (Figure U-2, Appendix U)

Mining was an important activity in the past in the American-Cathedral, Conundrum, East Maroon, Arkansas Mountain, Copper and Brush management units.

Table 1. Livestock grazing.

District	Allotment 1/ *	T	C/H	S/G	AUM	Number of Animals	Season	Developments
Taylor River	Gothic		X		372	860	8/1-10/4	none
Taylor River	Dry Basin		X		45	180	8/1-9/30	none
Taylor River	West Brush		X		792	432	8/6-8/30	4.5 miles of fence
Taylor River	Brush Creek		X		586	460	8/6-9/15	none
Sopris	Upper Crystal*		X		960	268	6/21-9/30	none
Sopris	Carbonate			X	1500	600	7/6-9/20	none
Sopris	North Fork			X	2125	850	7/6-9/20	none
Sopris	Lead King			X	2000	800	7/6-9/20	none
Sopris	Redstone	X						
Sopris	Nettle		X		111	37	7/11-10/10	none
Sopris	Avalanche	X						
Sopris	Geneva	X						
Sopris	West Sopris		X		1094	345	7/26-9/30	none
Aspen	East Sopris		X		903	236	6/16-10/10	4.5 miles of fence 2 springs
Aspen	Capitol Lake*	X						
Aspen	Capitol Creek		X		1073	280	9/16-10/10	1.5 miles of fence
Aspen	Copper Creek	X						
Aspen	West Snowmass*		X		150	50	7/1-9/30	none
Aspen	Snowmass*			X	1600	800	7/16-9/20	none
Aspen	Brush/Maroon*			X	2400	800	7/1-9/30	none
Aspen	Owl		X		252	84	7/1-9/30	none
Aspen	Maroon	X						
Aspen	Conundrum	X						
Aspen	Cattle Creek	X						
Aspen	Cathedral Lake	X						

Key T - Transportation Stock Allotment
C/H - Cattle and Horse Allotment
S/G - Sheep and Goat Allotment

1/ * Indicates allotment was unstocked in 1980.

Recent mining claims have been filed in the Conundrum management unit, and mineral exploration is taking place below Copper Lake.

Two mineral withdrawals are located at Conundrum Hot Springs (838 acres) and Crater Lake (100 acres). These areas cannot be developed for mineral entry.

K. Non-Federal Lands (Figure U-3, Appendix U)

There are less than 300 patented mining claims and 1 tract of State land in the wilderness. All the land is idle at this time. Private land along the bottom of the Conundrum management unit has been used for livestock grazing purposes in the recent past and this use may continue in the future.

Non-Federal lands pose no problems in terms of nonmotorized access.

L. Public Information

Public information consists of (1) signing inside the planning area and at the trailheads, (2) information given verbally by wilderness rangers and other Forest Service personnel, and (3) a number of publications.

Signing is scattered throughout the planning area. Directional signing is very limited on the Aspen District. Signing is found only at junctions in the Crater Lake, Snowmass Lake, and Williams Hardscrabble Lakes areas. The Sopris and Taylor River Districts have more directional signing on trails. Numerous regulatory signs related to camping exist in the MBSW. All trailheads have a list of regulations and the name of the trail.

Wilderness rangers provide directional information to visitors and assist them in low impact use techniques. Forest Service office visitor information personnel generally provide direction information and information on current conditions in the area.

The Forest Service produces at least nine different brochures (see list in Appendix M) on wilderness. There are also a number of commercial publications and guides available locally.

Interview work done by CSU indicates that the public is dissatisfied with the present amount of information put out by the Forest Service (see Appendix D). They would like to see better maps, more information on the natural environment, and a better explanation of regulations.

M. Public Safety

The mountainous terrain in the planning area can be hazardous to travel year-round. Hypothermia is a threat even during July and August due to rapid unforecasted weather changes. Mountain streams can be treacherous, especially during the runoff which usually lasts until mid-July. Fatalities and injuries are not uncommon.

Several trails are hazardous for horse use because they are steep, rocky, or boggy. These include Electric Pass, the bogs along the East Maroon trail, and the narrow rocky section of the Conundrum trail in the Copper management unit.

Many visitors to MBSW are relatively inexperienced in mountainous terrain. For example, there was a group of visitors in 1979 who were trapped at Maroon Lake in their short-sleeve shirts during an August snowstorm, and an inexperienced church group of young children who tried to cross a 12,000 foot pass during another August snowstorm.

Rescue parties may take several days to locate and rescue injured visitors. Sometimes helicopter support cannot be obtained for the rescue of a seriously injured person due to bad weather conditions. It may take at least 8 hours to go for help from some remote sections.

N. Recreation (Figure U-4, Appendix U)

The planning area received approximately 140,000 recreation visitor days of use from June 1978 to June 1979. More than 80 percent of all visitors enter through the West Maroon or Snowmass trailheads. Visitor use is particularly heavy on weekends and holidays between July 1 and Labor Day.

Party sizes are usually small, the average is less than four people. Large parties in excess of ten people and ten horses occasionally use the area. Interview data provided by CSU indicate that visitors prefer parties to have less than ten people (see Appendix D), which also supports data published by Stankey. 1/

Having a campfire is a desirable activity for many wilderness visitors. In many places campfires have caused unsightly scars in open areas, depleted surrounding areas of firewood, and caused visitors to illegally use live trees for firewood. Areas where campfires are a problem include:

Cathedral Lake	Lost Remuda Lake
Conundrum Hot Springs	Snowmass Lake
Crater Lake	Capitol Lake
Willow Lake	Avalanche Lake
Moon Lakes	Geneva Lake
Pierre Lakes	Copper Lake

1/ Stankey, George H. 1973. Visitor perception of wilderness carrying capacity. USDA, Forest Service, Res. Paper INT-142, 61 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.

Many visitors camp close to trails and other campsites. This adversely impacts both parties sense of solitude. Research and management experience indicate that when users camp 100 feet or more from consistently used trails or other campsites, (in forested areas) the adverse effect on social quality and biophysical impacts are generally acceptable. Designated campsites in transition and semi-primitive areas are spaced so that no more than three campsites (their occupants) are in sight of each other. Users in primitive and pristine areas are encouraged to camp out of sight and sound of each other.

Commercial use represents less than 2 percent of the total recreation use. This use is generally not a problem with the exception of the 4-5 large horseback groups (20 or more people and/or horses) which use the area each summer in July/August.

Many visitors use brightly colored clothing and equipment. These bright colors are easily seen over great distances in open country. Brightly colored clothing and equipment create a situation where fewer opportunities for solitude exist than would be possible if earth-colored equipment and clothing are used.

Over the history of the Maroon Bells-Snowmass Wilderness, use for recreation purposes in the area has increased use in an unconstrained manner. (See Trend and Demand Analysis in Appendix F). If the projected 4 percent annual increase in numbers of visitors continues opportunities for solitude will become nonexistent in much of the wilderness during the principal use season.

O. Research and Education

Colorado Outward Bound School and the Rocky Mountain Biological Lab (RMBL) are the only education programs presently operating in the planning area. The Outward Bound School is administered by a Forest Service multi-district special use permit. The Outward Bound School trains educators in survival and mountaineering techniques in order that these people can establish similar programs for young people throughout the nation. The School operates throughout the planning area. It stresses low impact use of the environment and operates in remote areas. In groups of 10 including an instructor, they climb some of the 14,000 foot peaks in the planning area.

There are two research programs operating in the planning area:

1. The Rocky Mountain Biological Lab (RMBL) in Gothic, Colorado.

2. The Colorado State University Department of Recreation Resources (CSU) and the Rocky Mountain Forest and Range Experiment Station (RMS) in Fort Collins.

The RMBL is administered by a Forest Service Special Use Permit on the Taylor River District. They conduct a number of botanical and zoological research studies in the Copper and Brush management units. The RMBL is represented by universities throughout the nation including the University of Wisconsin, Stanford University, and Cornell University. They expressed a concern that

increased recreation use may interfere with some of their research projects, and that the presence of dogs in the Copper management unit interferes with their marmot studies.

CSU and RMS will continue research throughout the MBSW to monitor and evaluate the affects of interim management direction.

P. Transportation System (Figure U-5, Appendix U)

The planning area contains approximately 165 miles of Forest Transportation System trails (see trails map) accessed by 21 trailheads. The trailheads are as follows:

Cathedral - access to trail #1984
American - access to trail #1985
Conundrum - access to trail #1981
East Maroon - access to trail #1983
West Maroon - access to trails #1975 and #1970
East Snowmass - access to trail #1977
Snowmass - access to trails #1975 and #2187
Haystack - access to trail #2187
Capitol - access to trails #1961 and #1960
Thomas Lakes - access to trail #1958
Avalanche - access to trail #1959
Redstone - access to trails #1963 and #1964
Lilly Lakes - access to trail #1964
Marble - access to trail #1967
Silver Creek - access to trail #1959
Fravert Geneva - access to trails #1973 and #1974
Schofield - access to trail #1970
Rustler Gulch - access to trail #317-2B
Copper - access to trail #737
West Brush - access to trail #738-2A
Twin Lakes - access to trail #407

See Recreation Survey Data in Appendix D and Wilderness Simulator Data in Appendix O for a comparison of parties entering each trailhead.

Problem areas exist along riparian areas, steep sections, rock slides, and alpine areas. These areas include:

1. Boggy areas in the Conundrum, East Maroon, and Capitol management units.

2. Rock slide areas in the West Maroon, American, Cathedral, Snowmass Lake, Geneva, and Copper management unit.

3. Rutted trails in the Conundrum, Snowmass Lake, Geneva, and Capitol management units.

4. Many areas are not suitable for safe horse use.

5. The roads accessing the Conundrum, Capitol, and Fravert-Geneva trailheads require periodic maintenance to keep them in a condition suitable for two-wheel drive use.

6. The relatively high use Capitol and Copper trailheads and the low use Twin Lakes and Rustler Gulch trailheads do not have parking facilities.

7. An increase in use is expected at minor trailheads of Rustler Gulch and Twin Lakes.

8. Eighty percent of all users access the area through the West Maroon and Snowmass trailheads.

9. Backpackers and horse users tend to favor the same three loop routes:

a. East Maroon-Copper
b. Snowmass-Snowmass Lake-Geneva-Fravert-West Maroon Loop
c. Avalanche-Avalanche Lake-Avalanche

Q. Endangered and Threatened Species

There are no known endangered and threatened animal species inhabiting the wilderness.

There are two known threatened or endangered plant species which grow in the MBSW. Senecio porteri (Porter groundsel), a species on the proposed endangered list, has been located in the Conundrum and Copper management units; and Sullivanta purpusii, (on the proposed threatened list), has also been located in the Conundrum and Copper management units and at numerous sites on the Sopris District.

R. Visual Resources

The entire wilderness is highly scenic. Under the Forest Service Visual Resource System, it is classified as variety class A and, because of its formal wilderness classification, as a sensitivity level 1 area. The visual quality objective for the entire wilderness is "preservation" of the natural environment. 2/ Vistas can be seen from almost anywhere, some as far away as 80 miles.

2/ VARIETY CLASS A - Distinctive: This refers to those areas where features of landform, vegetative patterns, water forms and rock formulations are of unusual or outstanding visual quality. SENSITIVITY LEVEL 1 - Highest Sensitivity: The highest degree of measure of viewer interest in the scenic objective of the landscape. VISUAL QUALITY OBJECTIVE - Preservation: This objective allows ecological changes only. Management activities, except for very low impact recreation facilities, are prohibited.

The most popular visual attractions include the nationally known Maroon Bells Mountains as seen from Maroon Lake and Crater Lake and the fall color change in the aspen throughout the wilderness.

There are two problem areas where visual objective standards are not being met: (1) the beginning of Capitol Creek trail stands out against the surrounding scenery from 9 miles away, and (2) the switchback above Avalanche Lake on trail #1969 similarly stands out at a distance of at least 2 to 3 miles from the pass between Capitol Lake and Avalanche Lake along trail #1961.

S. Water Quality

The Forest Land and Resource Management Planning Process has identified 12 prescription watersheds in the MBSW (water quality maps and additional information available at White River National Forest Supervisor's Office):

Thomas Lakes	Carbonate Creek
Avalanche Creek	Sopris Creek
Middle Crystal	Capitol Creek
Upper Crystal	Cattle Creek
Snowmass Creek	East River
Maroon Creek	Middle Brush Creek

Water quality monitoring in the Capitol and Castle Creek watersheds indicates the water is of high quality (see Appendix N), except for the presence of Giardia. Giardia (an intestinal parasite) may be found throughout the area in natural water sources. The most effective treatment for killing Giardia and other water-borne disease organisms is boiling water for at least 3 to 5 minutes at these elevations.

III. EVALUATION CRITERIA

The evaluation criteria were derived from several sources. Criteria A and B below were developed from public issues and Forest Service concerns listed in the introduction.

Evaluation criteria C was developed from Section 4 of the Wilderness Act, and criteria D is a concern regarding the ability of the Forest Service to provide a balanced variety of quality wilderness recreation and solitude experiences over time.

The evaluation criteria are as follows:

A. Alternatives must be feasible in terms of land, resource, and administrative capability.

B. Protect biophysical resources and social elements from unacceptable degradation.

C. Accommodate and administer those other uses or activities authorized in the Wilderness Act of 1964 (grazing, mining, prospecting, water production, historic, education, scientific study, and commercial services) consistent with levels of acceptable impacts established.

D. Provide for a variety of quality wilderness-related recreation and solitude opportunities.

IV. ALTERNATIVES CONSIDERED

A. Introduction to Alternatives

The five alternatives considered in this environmental assessment are formulated to produce different levels of quality wilderness opportunities. Some activities, such as grazing and mining, do not vary with alternatives because the Wilderness Act states that such uses are to be accommodated within resource capability constraints. These activities are evaluated on a site-by-site basis in the management unit direction where necessary (see Interim Direction for the MBSW section IV).

The no action alternative (No. 5) does not correct current problems within the MBSW (see Introduction-Description of the area and current situation). If present management is continued, the long-term result would be a progressive unacceptable deterioration of social and environmental elements. Alternative 5 would not provide for corrective action to halt or reverse the current trend toward unacceptable degradation of biophysical resources and opportunities for relative degrees of solitude and primitive recreation.

The remaining four alternatives require some common mitigation measures to protect wilderness biophysical and social elements and public safety.

1. Develop comprehensive interim direction for the MBSW.

2. Incorporate primitive recreation and solitude opportunity zoning and other area stratification management techniques into the interim direction.

3. Develop comprehensive public information and public safety programs to meet visitor and Forest Service management needs.

4. Use naturally occurring insects, disease, and fire to perpetuate natural ecosystems.

5. Develop standards to monitor and protect wilderness biophysical and social elements.

6. Provide for public safety of MBSW visitors.

B. Discussion of Alternatives

The alternatives are described below along with mitigation measures needed to carry out the alternative or protect wilderness resources.

1. Alternative #1 - Emphasize Opportunities for Recreation Use

This alternative emphasizes transition and semiprimitive opportunities at the expense of primitive and pristine opportunities (Figure 1). It emphasizes visitor use of the area and at the same time incorporates wilderness opportunity area directions to protect and maintain the biophysical and social elements.

Mitigation Measures:

a. Provide administrative coverage requiring approximately 20 wilderness rangers and 11 wilderness information specialists.

b. Increased trail maintenance to accommodate increased visitor use and provide for two five-person trail crews.

c. Construct trails to Pierre, Moon, and Lost Remuda Lakes.

d. Reconstruct Electric Pass trail.

e. Increase present number of backcountry campsites to meet public demand.

2. Alternative #2 - Maintain Current Use Levels and Activities in Harmony with Biophysical and Social Elements

This alternative maintains current use levels in the area (Figure 2). It incorporates wilderness opportunity area standards and provides a mix similar to existing levels of transition, semiprimitive, primitive, and pristine wilderness opportunities. This alternative reduces visitor use at popular destinations by redistributing overnight use into nearby areas. A permit system will be provided for if other means maintaining acceptable levels of use, based on land capability cannot be accomplished.

Mitigation Measures:

a. Provide administrative coverage requiring approximately ten wilderness rangers and three wilderness information specialists.

b. Incorporate a mandatory self-registration system to facilitate distribution of public information and to obtain accurate visitor use data. A use limiting permit system is incorporated if the public information system and other measures cannot maintain the levels of acceptable use (see Interim Management Direction for the MBSW, Recreation in Area-Wide Prescription #1) within a three-year period.

c. Provide for one five-person trail crew.

3. Alternative #3 - Emphasize Opportunities for Solitude and Primitive Recreation and Other Activities in a Natural Setting.

Alternative #3 increases primitive and pristine opportunities in all but the following areas (Figure 3):

a. American-Cathedral management unit
b. Conundrum management unit
c. Snowmass Creek
d. Snowmass Lake
e. Geneva Lake
f. Crater Lake
g. Thomas Lake

These areas are maintained as semiprimitive and transition opportunity areas. A permit system would be likely.

Mitigation Measures:

a. Provide administrative coverage requiring approximately 13 wilderness rangers and seven wilderness information specialists. Several of the wilderness rangers also work as trail crew as needed.

b. Incorporate a mandatory self-registration system to facilitate distribution of public information and to obtain accurate visitor use data. A use limiting permit system is incorporated if the public information system and other measures cannot maintain the levels of acceptable use (see Interim Management Direction for the MBSW, Recreation in Area-Wide Prescription #1).

4. Alternative #4 - Maximize Opportunities for Solitude and Primitive Recreation Use and Other Activities in a Natural Setting

Alternative #4 minimizes visitor use and requires a use limiting permit system to obtain low use levels (Figure 4).

Mitigation Measures:

a. Provide administrative coverage requiring approximately 20 wilderness rangers and 10 wilderness information specialists who also administer a use limiting system. Several of these rangers and/or W.I.S. also work as a trail crew as needed.

b. Implement mandatory permit system which limits number of parties entering trailheads per day.

5. Alternative #5 - No Action

Alternative #5 would continue the current trends of use within the wilderness. The no action affirmative assumes continuation of management efforts and commitment of administration resources at approximately the 1979 level. This would call for approximately 5 wilderness rangers and trail crew members. Registration of visitors would continue on a voluntary basis and current limited restrictions on camping and commercial outfitter use would remain in effect.

V. EFFECTS OF IMPLEMENTATION

This section compares the alternatives. It describes the consequences of implementing each alternative in terms of outputs, costs, and environmental changes from the present situation.

A. Alternative #1 - Emphasize Opportunities for Recreation Use

Visitor use under this alternative will increase by 10-15 percent. Wilderness biophysical and social elements will be allowed to degrade past current conditions but not to the point where inherent natural succession processes are permanently disrupted. Unavoidable effects include local degradation of air and water, displacement of wildlife populations, and a reduction in opportunities for solitude. The majority of these will occur around popular campsites and trails. Remote areas will become more accessible and conflicts will increase between different types of wilderness users.

Mining, prospecting, and grazing levels are unaffected. Discovery of historic and archaeological sites increases the probability of vandalism of those sites. Total potential commercial use would increase with increasing visitor use, although excessive commercial use around popular areas is discouraged. Untrammeled areas for scientific study purposes decrease.

Alternative #1 stresses transition and semiprimitive opportunities and does not provide a variety of quality wilderness-related opportunities. Effective administration of increased numbers of people while still successfully protecting wilderness resources and benefits is unlikely.

Administration costs will increase markedly because of the requirement of 10 additional wilderness rangers and eight additional wilderness information specialists.

B. Alternative #2 - Maintain Current Use Levels and Activities in Harmony With Biophysical and Social Elements

Alternative #2 maintains approximately the present level of visitor use. Visitor use is redistributed from some high use areas by public information and education programs. There are unavoidable effects occurring, environmental and social rsources will be maintained at acceptable levels in and around campsites and trails, but not to the same extent as for alternative #1. Use at the Conundrum Hot Springs and Snowmass Lake would be reduced by displacing some overnight use to nearby designated campsites. Remote areas would be either enhanced or unaffected.

Mining, prospecting, grazing levels, and scientific uses are unaffected. Potential commercial use would remain the same.

A mandatory self-administered registration system is incorporated to facilitate distribution of public information and to obtain accurate visitor use information. 3/ A use limiting permit system would be incorporated within three years if the public information program and other techniques fail to meet levels of acceptable use standards (see Interim Management Direction for the MBSW. Section IV, pg. 15). A variety of quality wilderness-related opportunities is provided by this alternative although not the maximum the area is capable of producing. Effective administration of present numbers of people using existing travel corridors and campsites is highly feasible.

Administrative costs would increase slightly above current levels because of projected increases in use.

C. Alternative #3 - Emphasize Opportunities for Solitude, and Primitive Recreation and Other Activities in a Natural Setting

This alternative decreases visitor use from 10-15 percent from present RVD's. Fewer people in the area at one time would bring about improvement in wildlife and visitor solitude, and would decrease the impacts of trampling in and around campsites, trails, and popular destinations.

Mining, prospecting, and grazing levels are unaffected. Potential total commercial use would decrease with total visitor use. Untrammeled areas for scientific study would increase.

A mandatory self-administered registration system would be used as in alternative #2. Likewise, a use limiting permit system would be used if needed. The variety of quality wilderness-related opportunities is greater than for alternative #2.

Administrative feasibility would be slightly less than for alternative #2. On an average, one person in 10 would have to be turned away once the permit system was in operation. Several areas would be converted from semiprimitive to primitive opportunity management.

3/ Under the Mandatory Registration System it is assumed that a better informed using public would result in awareness and self-policing of camping and traveling practices which would reduce the human impact on the biophysical and social resource elements within the wilderness.

Administrative costs for this alternative would be somewhat higher than those protected for alternative #2 because of the three additional rangers and four additional information specialists required.

D. Alternative #4 - Maximize Opportunities for Solitude and Primitive Recreation and Other Activities in a Natural Setting

Alternative #4 decreases visitor use from 40-60 percent. Unavoidable effects are minimized and wilderness quality maximized under this alternative, although mining, prospecting, and grazing levels would remain unaffected. Total potential commercial service opportunities are minimized while untrammeled areas for scientific study are maximized. A use limiting permit system is incorporated which would turn away one of every two potential visitors.

Administrative feasibility would be low unless the number of wilderness ranger personnel were greatly increased for law enforcement purposes. The number of people turned away (one out of every two) would have adverse social effects. Most visitors who enter the area would be required to change their backcountry use behavior from a predominately semiprimitive one to behavior compatible with primitive or pristine settings.

Alternative #4 would have the highest administrative costs as a result of administering a mandatory permit system along with 10 additional wilderness rangers and seven additional wilderness information specialists.

E. Alternative #5 - No Action - Continue current levels of use within the wilderness

Number of wilderness users would continue to increase of approximately 4 percent per annum. However, total visitor days use would be expected to increase 10-15 percent per annum during the 1980-85 period. (Ref. Table 7, appendix F) By 1983, this would result in a 17 percent increase in numbers of people and a 57 percent increase in total visitor days use over current use levels. (see Table 3).

Wilderness biophysical and social elements would be degraded past current conditions to the point that inherent natural succession processes would often be permanently disrupted in specific heavily used travel corridors and popular destination areas. During the snow free season local degradation of air and water quality, displacement of wildlife populations and a visual elimination of opportunities for solitude, as it is known currently, can be expended by the end of the 1980-85 time period.

Administration costs will not necessarily increase during the 1980-85 period because of no long-range plan to take corrective actions. However, long term costs as a result of no mitigation actions would be markedly higher than for any other alternative. In most popular use areas such as Snowmass Lake, Crater Lake, Geneva Lake, Conundrum Hot Springs and principal valley bottom travel corridors would receive loss of vegetation cover and organic soil loss resulting in irretrievable loss of an untrammeled biophysical environment. This loss coupled with high density of use would cause a significant degradation of the social elements of the wilderness resource. (re. perceived naturalness and opportunities for solitude)

F. Comparison of Alternatives

Figures 1, 2, 3, and 4 depict the wilderness opportunity areas allocated for the four alternatives. Alternative #5 would not allocate opportunity areas. Resulting impacts would be concentrated within semiprimitive and transition areas shown in figure 1. Table 2 depicts the relative increases and decreases in selected characteristics for each alternative. Tables 3, 4, and 5 indicate the types and amount of user encounters which would likely occur in each alternative (based on wilderness travel simulator--see Appendix O).

VI. EVALUATION OF ALTERNATIVES

This section compares alternatives to one another by using the evaluation criteria. The evaluation criteria are ranked as to their importance to facilitate the selection of a preferred alternative.

The rankings are as follows:

A. Feasibility - Alternatives must be feasible in terms of land, resource, and administrative capability. An alternative which is less feasible than another has less a chance of being successfully implemented.

B. Protect wilderness biophysical and social elements - The Wilderness Act and the Forest Service Multiple Use-Sustained Yield Act state that the environment must be protected so that resource outputs can be obtained on a sustained yield basis.

C. Accommodate and administer other uses - The Wilderness Act states these uses and activities are to be accommodated within resource constraints.

D. Variety of quality wilderness opportunities - The Wilderness Act states that wilderness will have outstanding opportunities for solitude or a primitive and unconfined type of recreation. One way to ensure this is to provide a variety of quality wilderness related opportunities, and by using the Recreation Opportunity Spectrum.

Table 6 on page 34, displays the evaluation of alternatives.

Alternative #1 meets the evaluation criteria dealing with other uses and it requires more resources to administer. This alternative generally does not meet the criteria of resource protection and providing a variety of wilderness opportunities. All of the criteria are met with alternative #2 since it maintains the present situation in terms of feasibility, providing a variety of wilderness opportunities, and other uses. Protection of resources is enhanced with this alternative. Alternative #3 meets the criteria of protection, other uses, and providing a variety of opportunities. The administrative feasibility is less than alternative #2 because additional costs are created by restricting visitor use. Standards for protection of resources and providing a variety of opportunities are exceeded with alternative #4. The criterion of adminsitrative feasibility is not met under this alternative.

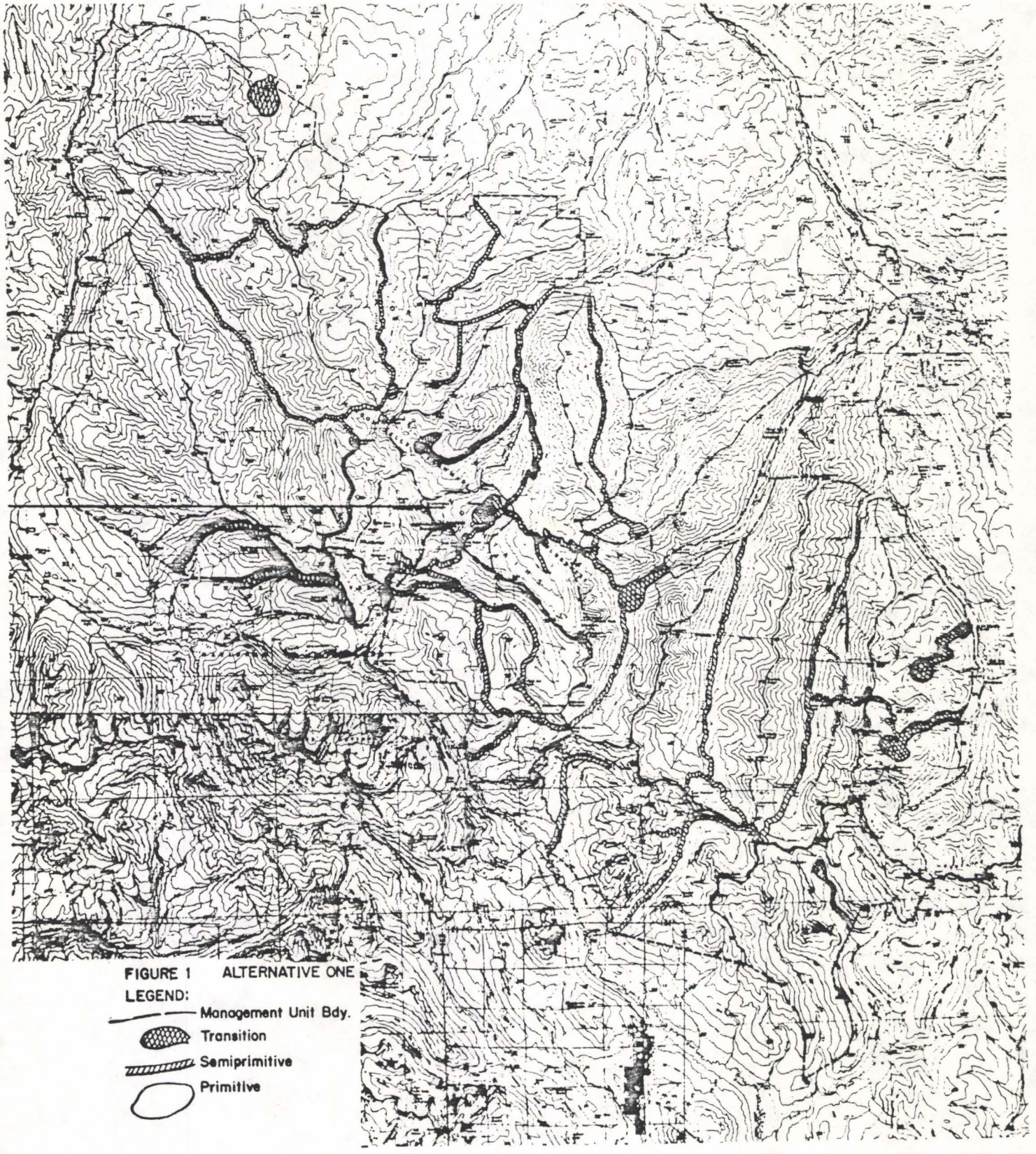


FIGURE 1 ALTERNATIVE ONE

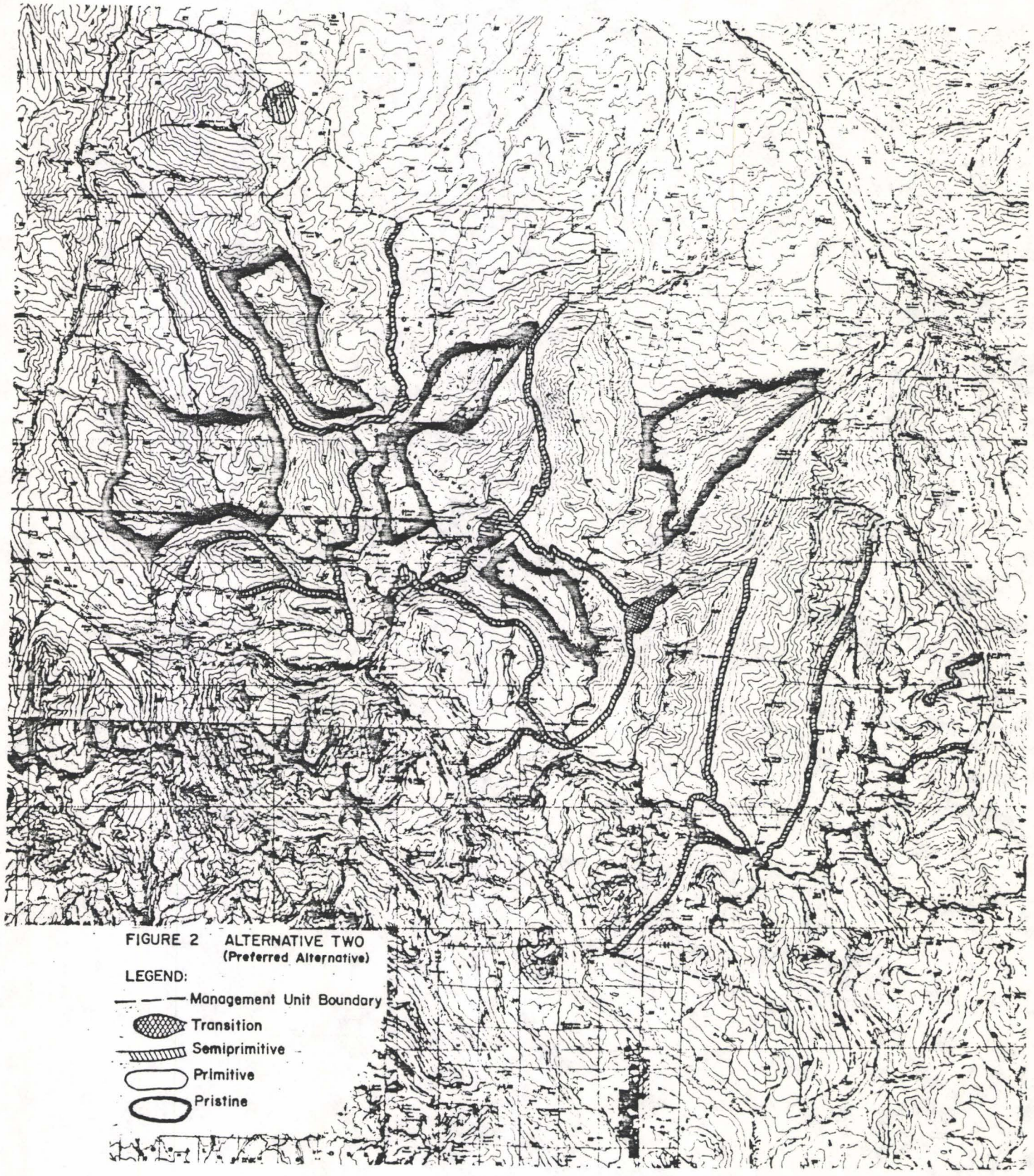


FIGURE 2 ALTERNATIVE TWO
(Preferred Alternative)

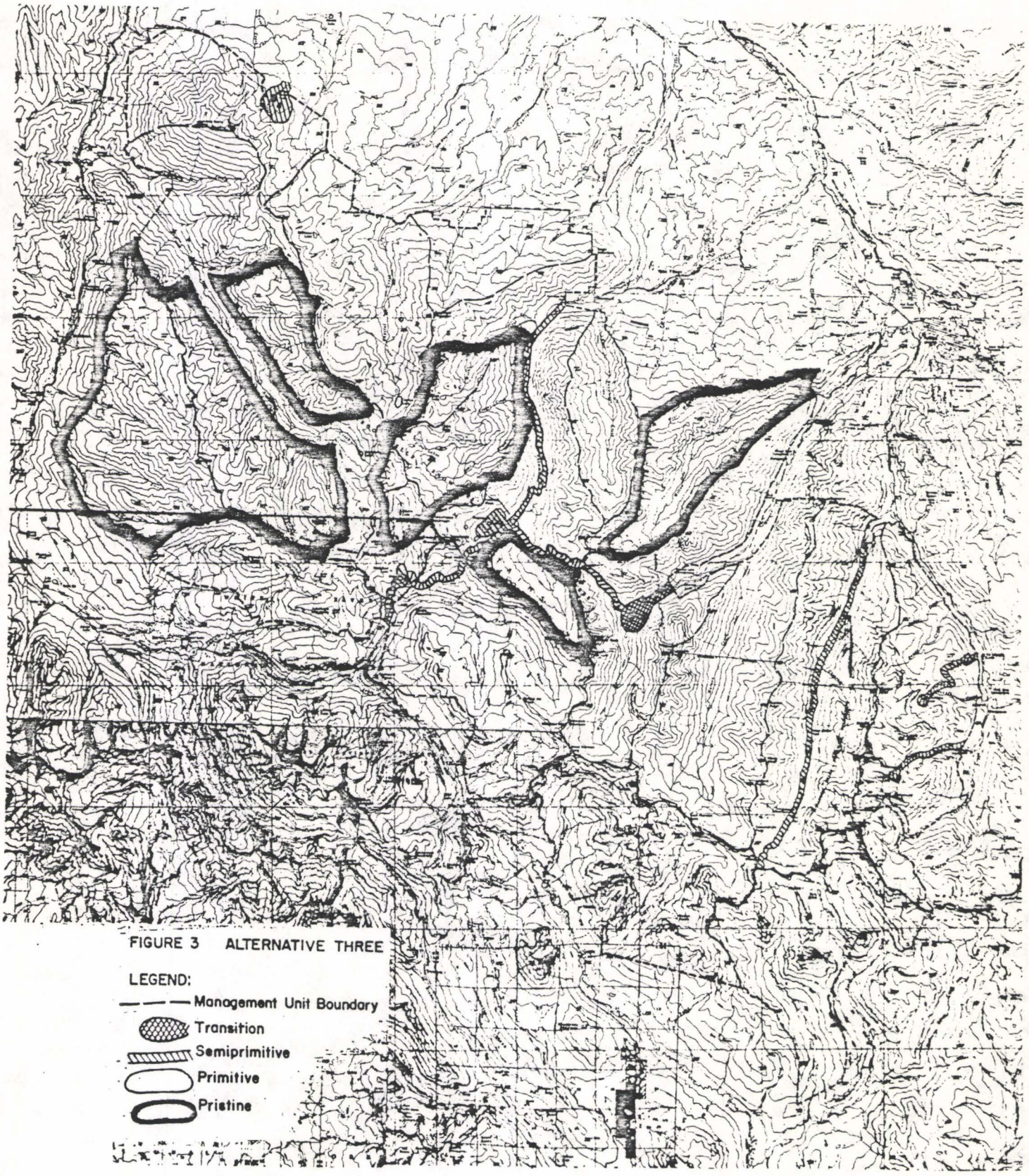


FIGURE 3 ALTERNATIVE THREE

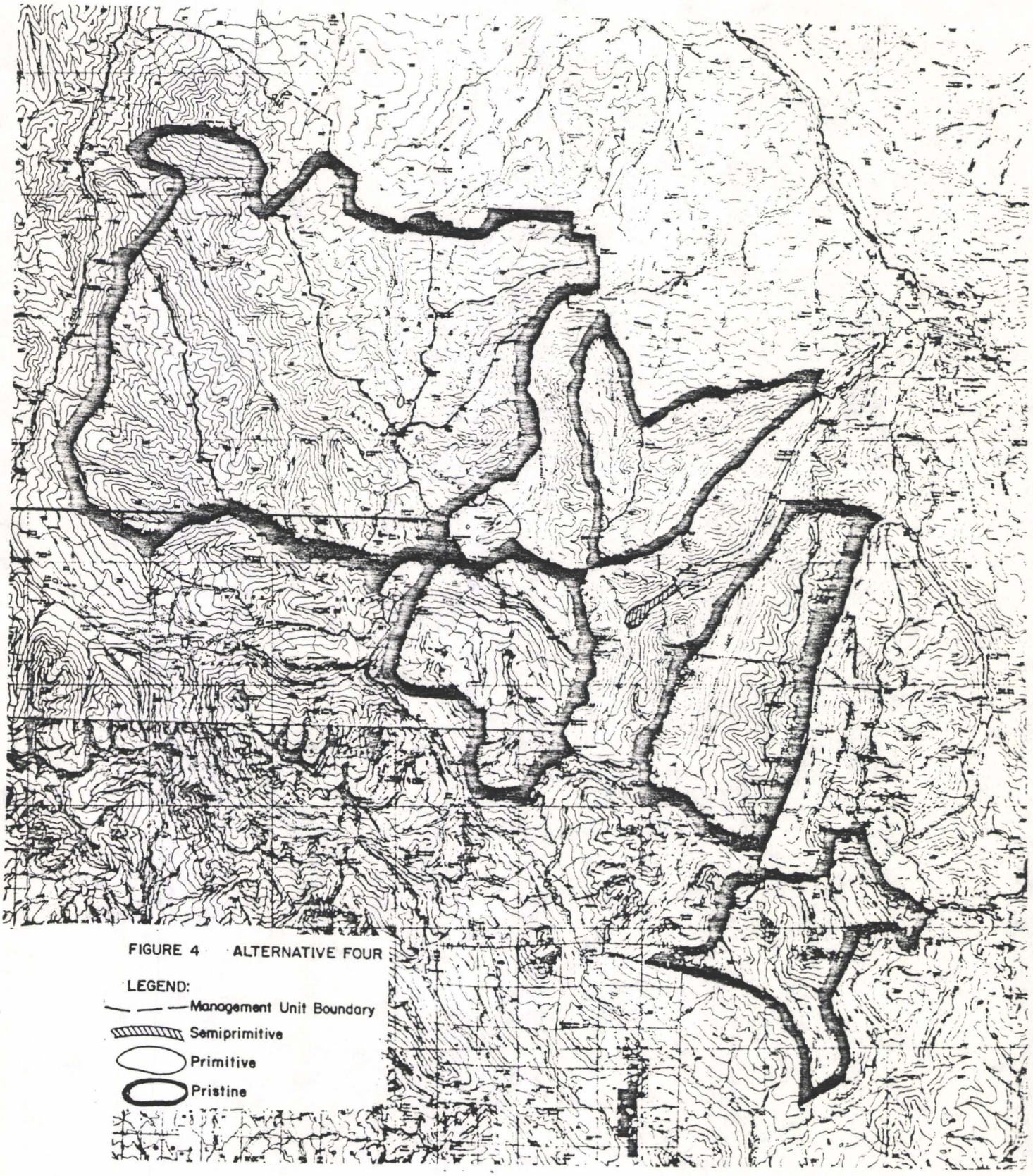


FIGURE 4 ALTERNATIVE FOUR

Table 2. Comparison of alternative directions for MBSW.

Characteristics	Alternatives 1	2	3	4	5
Transition opportunity areas	+3	0	0	-3	+2
Semiprimitive opportunity areas	+3	0	-1	-2	+2
Primitive opportunity areas	-1	0	+2	+3	-2
Pristine opportunity areas	-3	0	+1	+3	-3
Protection of biophysical resource	+1	+2	+2	+3	-2
User encounters	+2	-2	-2	-3	+3
Unavoidable adverse effects	+1	0	-1	-2	+3
Grazing	0	0	0	0	0
Prospecting	0	0	0	0	0
Mining	0	0	0	0	0
Total visitors	+1	0	-1	-2	+3
Total commercial use	+2	0	-1	-2	0
Feasibility of implementation	-1	0	-1	-2	0
Scientific and educational uses	-1	0	+1	+3	0

Numbers indicate the following:

+3 - large increase from present situation
+2 - medium increase
+1 - slight increase
0 - no change
-1 - slight decrease
-2 - medium decrease
-3 - large decrease

Table 3. Average number of parties and encounters during a typical peak-season day in the MBSW by the five interim management alternative directions. a/

Types of Encounters	Interim Management Alternative Directions 1 (increase total use by 15%)	2 (redistribute current use levels)	3 (decrease total use by 15%)	4 (Increase total use by 45%)	5 (increase total use 4% per year & RVD 12% per year)
Average total number of parties per peak-season day in MBSW (Table 2)	327	290	250	159	511
Average number of day-use parties per peak-season day (Table 2 minus 6)	73	61	50	34	74
Average number of camping parties per peak-season day (Table 6)	254	229	200	125	404
Average number of trail encounters for day-use and camper parties per party per peak-season day (Table 2)	25	21	17	12	37
Average number of trail encounters per camper party per peak-season day (Table 6)	15	13	11	7	23
Average number of camp encounters per camper party per peak-season day (Table 3)	12	11	8	6	19

a/ Data obtained from wilderness travel simuations (5 replications)

b/ Increase based on travel analysis Appendix F, Table 7 as calculated for year 1983 in the planning period '80-'85

Table 4. The percent of parties having different numbers of trail encounters for the four interim management directions during a typical peak-season day (late July/early August).[a]

Number of trail encounters per party during peak-season day	Interim Management Alternative Directions							
	1 (increase total use by 15%)		2 (maintain current use)		3 (decrease total use by 15%)		4 (decrease total use by 45%)	
	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent
0	14.6	14.6	15.0	15.0	16.1	16.1	18.7	18.7
1-2	7.1	21.7	9.6	24.6	9.6	25.7	13.0	31.7
3-4	6.7	28.4	8.2	32.8	8.4	34.1	9.1	40.8
5-9	12.7	41.1	16.4	49.2	13.7	47.8	17.0	57.8
10-19	14.0	55.7	19.1	68.3	19.0	66.8	22.5	80.3
20-29	13.7	68.8	12.1	80.4	13.4	80.2	9.6	89.9
30+	31.2	100.0	19.6	100.0	19.8	100.0	10.1	100.0

[a]Data obtained from Summary Table 2 of the wilderness travel simulation runs.

Table 5. The percent of camper parties having different numbers of camp encounters for the four interim management directions during a typical peak-season day (late July/early August).[a]

Number of camp encounters per party during peak-season day	Interim Management Alternative Directions							
	1 (increase use by 15%)		2 (maintain current use)		3 (decrease use by 15%)		4 (decrease use by 45%)	
	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent
0	14.3	14.3	15.3	15.3	17.1	17.1	24.8	24.8
1-2	25.9	40.2	27.0	43.0	30.0	47.1	31.9	56.7
3-4	16.3	56.5	15.7	58.7	13.7	60.8	13.2	69.9
5-9	14.7	71.2	16.8	75.5	14.7	75.5	10.8	80.7
10-19	10.1	81.3	11.2	86.7	9.9	85.4	10.0	90.7
20-29	4.9	86.2	6.7	93.4	6.1	91.5	6.5	97.2
30+	13.8	100.0	6.6	100.0	8.5	100.0	2.8	100.0

[a]Data obtained from Summary Table 3 of the wilderness travel simulation runs.

Table 6. Comparison of alternatives by evaluation criteria

Evaluation Criteria	ALTERNATIVES* 1 Emphasize Opportunities for Recreation Use	2 Redistribute Current Levels of Use	3 Emphasize Solitude and Primitive Recreation Opportunities	4 Maximize Solitude and Primitive Recreation Opportunities	5 No Action Alternative
Feasibility	3--Visitor use would increase 10-15% over current levels. This will require more administrative resources to adequately administer the wilderness under this alternative, than under Alternatives 2 & 5, but less for Alternatives 3 & 4.	4--Maintains basically the present level of use and existing patterns of use. Slight increase in administrative resources would be required.	3--Visitor use would be reduced by 10-15% from current levels, principally in semiprimitive opportunity areas. This will require more administrative resources to maintain reduced use levels and enforce restrictions.	2--Visitor use would be decreased 40-60% below current levels. Use limiting permits system would be necessary and require the highest use of administrative resources.	2--An annual increase of 11 percent per year in total number of visitors and an increase of 10-15 percent per year in total visitor days use would exceed all other alternatives within 1 to 4 years. Such use would require more administrative resources than any other alternative to administer the wilderness biophysical and social elements within acceptable limits.
Protection of Biophysical Resources	2--An increase in unavoidable adverse impacts would occur under this alternative over those expected under Alternative 2, but would be less than under Alternative 5.	4--Existing levels of unavoidable impacts are maintained and current unacceptable impacts are alleviated on a site specific basis.	4--Unavoidable adverse impacts are somewhat reduced below those occurring in Alternative 2.	5--Minimizes unavoidable impacts on biophysical resources over any other alternatives.	1--Alternative maximizes unavoidable adverse impacts on biophysical resources and any other alternative.
Other Uses 1/	4--This alternative would provide for the highest number of commercial service opportunities, but of lower quality due to overall increased use. A reduction in the number of areas available for scientific study under pristine conditions would occur.	4--Existing number of commercial services & opportunities for scientific study of untrammeled areas are maintained.	Commercial service opportunities would remain essentially the same as in Alternative 2 with opportunities for solitude somewhat increased over current levels and greatly increased over Alternative 5. Opportunities for scientific study of untrammeled areas increased over Alt. 2, & greatly increased over Alt. 5.	Maximizes quality of solitude experiences. However, alternative would cause one of two potential visitors to be turned away creating a high level of adverse social impacts over current situation. Commerical use opportunities would be reduced.	--2--Alternative maximizes reduction in number of scientific study opportunities. Would result in maximum number of conflicts between recreation users and other resource uses due to increased use levels in all management areas.
Variety of Quality Wilderness Opportunities	2--Places emphasis on transition and semi-primitive opportunities which are readily available outside the wilderness	4--Existing levels of wilderness related opportunities are maintained.	4--Increases primitive and pristine opportunities which are associated with wilderness.	5--Maximizes primitive and pristine opportunities.	--2--Variety of opportunities for unconfirmed recreation would decrease as areas become more crowded. Opportunities for solitude would be greatly reduced over alternative #2. Only semiprimitive and transition opportunities would be available throughout the wilderness during principal use season.

1/ Domestic livestock grazing and mineral exploration activities remain unaffected within all alternatives.

*5--exceeds criteria
4--meets criteria
3--generally meets criteria
2--generally does not meet criteria
1--does not meet criteria

VII. CONSULTATION WITH OTHERS

There were a number of methods used to contact the public and solicit their comments during the planning process. These include:

A. Data collected by research cooperators in the Department of Recreation Resources, Colorado State University, in cooperation with the Recreation Research Group at the Rocky Mountain Forest and Range Experiment Station, in Fort Collins, Colorado, and Intermountain Forest and Range Experiment Station in Missoula, Montana. (see Appendix O, Wilderness Travel Simulation Data) (see Recreation tables in Appendix D).

1. Structured interviews with 3,400 study area visitors for the purpose of describing the recreation use and characteristics of users.

2. Detailed questionnaires completed by 650 Maroon Bells-Snowmass Wilderness area users for the purposes of defining preferred recreation experiences, to identify user perceived problems, and to gain public input into possible management activities.

3. Fifty staff days of participant observation at popular wilderness camping areas.

4. Detailed interviews with 30 residents in the Aspen, Carbondale, and Marble areas.

B. A package of issues, concerns, and other material mailed to over 100 interested parties.

C. Forest Service wilderness workshops conducted in Aspen, Carbondale, and Crested Butte.

Public participation for the package of issues and concerns and the wilderness workshops was low. These respondents assisted in developing issues and concerns, and the wilderness workshop groups gave conceptual approval to managing wilderness by the wilderness opportunity spectrum. A major portion of the public participation and input came from the CSU interviews with wilderness visitors (see Recreation tables in Appendix D). This group expressed the following major concerns:

A. Too many people in the area
B. Little information on the area
C. Enforce a lease law for dogs
D. A need for designated campsites in heavily used areas
E. Keep campsites away from lakes and streams
F. Limit visitor use in high use areas
G. Prohibit campfires in some areas
H. Limit party size to ten or less people
I. Limit information signs

VIII. CONTRIBUTORS

A. Prepared by

Tom Bell--Aspen District Ranger
Jeffrey L. Ulrich--Outdoor Recreation Planner, Aspen Ranger District
Glenn Haas--Department of Recreation Resources, Colorado State University

B. Other Project Cooperators

Forest Service

Regional Office--Rocky Mountain Region

Paul Weingart--Assistant Director, Recreation, R-2
Gary Plisco--Wilderness and Special Areas, R-2
Chuck McConnell--Wilderness and Special Areas, R-2
Steve Sigstad--Cultural Resources, R-2
Martin Wefald--Computer Science Specialist, R-6

White River National Forest

Bob Miller--Recreation and Lands
Skip Kowalski--Wildlife
Anthony Svatos--Soils
Scott Fifer--Hydrology
Erik Martin--Landscape Architect
Gerald P. Hart--Community Planner

Aspen Ranger District

J. T. Richer--Assistant Ranger
Pat Halligan--Community Planner
Ron Thompson--Supervisory Forestry Technician
Rob Burnett--Seasonal Forestry Technician
Marty Hammel--Seasonal Fire Technician

Sopris Ranger District

Vic Weyers--Sopris District Ranger

Grand Mesa, Uncompahgre, and Gunnison National Forest

Miles Weaver--Forester, Recreation and Lands Staff

Taylor River District

Mike Curran--Taylor River District Ranger
Dave Ruff--Forester, Recreation and Lands

Research

Bev Driver--Rocky Mountain Range and Forest Experiment Station, USDA
Robert Lucas--Intermountain Range and Forest Experiment Station, USDA
Perry Brown--Department of Resource Recreation Management, Oregon State University
Wes Henry--Department of Recreation Resources, Colorado State University

APPENDIX B

OVERVIEW OF THE MANAGEMENT-RESEARCH DEMONSTRATION PROJECT FOR THE MAROON BELLS-SNOWMASS WILDERNESS

APPENDIX B

Background Information

The management-research demonstration project was created in 1978 as a consequence of a suggestion by the Region 2, Deputy Regional Forester for Resources that recreation researchers at the Rocky Mountain Station (RMS) and Colorado State University (CSU) cooperate in developing a management plan (later called interim management directions) for the Maroon Bells-Snowmass Wilderness (MBSW). Follow-up efforts by the recreation staff of the Region 2 regional office, interested researchers at RMS and CSU, and other parties resulted in the decision that the effort should be a cooperative one including the regional office, the White River and Gunnison National Forests, the Aspen, Sopris, and Taylor River Districts, RMS, CSU, and the Recreation Research Work Unit of the Intermountain Station.

Once all parties agreed to the desirability and feasibility of the effort, a proposal for the project was written and approved to: (1) clearly state the purposes of the project; (2) assign responsibilities to all parties involved; (3) define sources and amounts of funding needed; and (4) assure the continuity of the five-year project, assuming that transfers of beginning cooperators would take place. Exhibit 1 to this appendix shows the signature sheet, executive summary, and the first four pages of that proposal. Those pages define the purposes of the project and the spirit with which it was created.

To implement the project, a coordination team was created, which during the first year of the effort met at least monthly, and thereafter as needed. The membership of that team has changed over time, and some members have been more active than others. Those members are shown alphabetically below.

Members of the Coordination Team

J. Ross Arnold, Colorado State University
Thomas Bell, Aspen Ranger District
Perry Brown, Colorado State University
Dennis Bschor, Aspen Ranger District
Mike Curran, Taylor River Ranger District
B. L. Driver, Rocky Mountain Station
Glenn Haas, Colorado State University
Robert Lucas, Intermountain Experiment Station
Charles McConnell, R-2 Regional Office
Robert Miller, White River National Forest
Gary Plisco, R-2, Regional Office
Jack Troyer, Sopris Ranger District
Jeff Ulrich, Aspen Ranger District
Miles Weaver, Gunnison National Forest
Victor Weyers, Sopris Ranger District

The project has truly been a cooperative one between research and management with much mutual assistance and benefit.

Exhibit 1 to Appendix B

PROPOSAL

for

A COOPERATIVE MANAGEMENT-RESEARCH
DEMONSTRATION PROJECT FOCUSING ON THE
MAROON BELLS-SNOWMASS WILDERNESS IN COLORADO

involving

Management Units	Contact	Initials	Date
Region 2 of the U.S. Forest Service			
1. Recreation and Lands Division of the RO	Gary Plisco		4/25/78
2. White River National Forest	Robert Miller		4/10/78
3. Aspen Ranger District	Tom Bell		4/11/78
4. Sopris Ranger District	Vic Weyers		4/11/78
5. Gunnison National Forest	Norbert Milanowski		4/20/78
6. Taylor River Ranger District	Stephen R. Pierce		4/19/78
Research Units			
Recreation Behavior Graduate Program, College of Forestry and Natural Resources, Colorado State University	Perry J. Brown		5/17/78
Forest Service Experiment Stations			
1. RMS Research Project 1901	B. L. Driver		5/15/78
2. RMS R&D Program 4151	Richard Driscoll		5/16/78
3. INT Research Project 1903	Robert C. Lucas		5/21/78

Recommended:

	Supervisor, White River N.F.	4/10/78 (date)
	Supervisor, Gunnison N.F.	4/19/78
	Staff Director, R & L, R-2	5/11/78
	Staff Director, FRR, WO	April 19, 1978
	Staff Director, FER, WO	MAR 20 1978
	Assistant Director, RMS	5/16/78

Approved:

	Dean, College of Forestry and Natural Resources, CSU	5/17/78
	Regional Forester, R-2	5/12/78
	Director, RMS	5/17/78
	Director, INT	6/12/78

Executive Summary

A demonstration management-research project is proposed which will center on the Maroon Bells-Snowmass Wilderness in Colorado. Participants will include Forest Service managers in R-2 and researchers in RM-1901, RM R&D-4151, INT-1903, and the recreation behavior graduate program at Colorado State University.

The three related purposes of the project are to:

(1) Apply the best available technology for wilderness and dispersed recreation planning and management.

(2) Further develop and refine that technology.

(3) Monitor and evaluate the implementation of that technology.

The focus of these efforts will be on development, implementation, and evaluation of a wilderness management plan for the Maroon Bells-Snowmass Wilderness and contiguous areas of influence.

The project will commence in June 1978, with field research being conducted during a 12-month period to identify and quantify the preferences of the users of the study area. Concurrently, during that time, management will be conducting preliminary public hearings and gathering background resource data for the physical assessment of the area. That assessment will be made using the concept of a recreation opportunity spectrum, which is being developed jointly by the research and management team. That concept will be refined and tested both for inventory and management purposes in the proposed project. Following development of the management plan for the study area, that plan will be implemented and monitored by research until 1984.

The results of these R&D efforts will be:

(1) The transfer and evaluation of new technology which should contribute to better planning and management of wilderness and related dispersed recreation resources.

(2) Continuation of the research called for in the work unit descriptions of the research units involved.

(3) Better coordination between these research units.

Exhibit A summarizes the proposed program of work. For the proposal to be implemented, the Regional Forester, R-2, will need to approve the target dates for completion of (1) the draft wilderness management plan by September 1, 1979, and (2) the approved plan (with EAR) by October 1, 1979. In addition, responsible officials will need to endorse the Exhibit B budget for the entire project (FY's 78-85), without which the continuity of the project cannot be assured.

EXHIBIT A. Summary of Goals and Activities Proposed for the Maroon Bells-Snowmass Wilderness Management Research Demonstration Project.

Cooperators: R & L Staff, R-2, RO; White River and Gunnison NFs; Aspen, Sopris, and Taylor River RDs; RM-1901, RM-R&D 4151, INT-1903, and Recreation Behavior Graduate Program, CSU.

Goals:
1. Using best available technology, develop a management plan for the Maroon Bells-Snowmass Wilderness and contiguous backcountry. Plan will incorporate new ideas and management techniques.
2. Implement the plan and monitor, evaluate, and document its effectiveness.
3. Help facilitate accomplishment of the missions of the FS research work units involved.

Activities, Grouped by Planned Accomplishment:

Prepare Management Plan (June 1978 - January 1980)	Research[a] (June 1978 - December 1984)		Plan Implementation, Monitoring, and Evaluation (June 1980 - August 1983)	Reporting and Documentation (June 1978-Dec. 1984)
	Inputs to Management	Work Unit Mission Accomplishment		
1. Prepare wilderness mgt. study plan.	1. Use of Code-A-Site inventory technique.	1. User preference studies including social data for carrying capacity determinations.	1. Prepare procedures for plan monitoring and evaluation.	1. Public announcement of the R&D project.
2. Design and implement public involvement process.	2. Systems to prevent nuisance-depreciative behaviors.	2. Make validity tests of user preference measuring techniques, using cross-checking procedures.	2. Implement plan.	2. Prepare annual reports.
3. Conduct resource inventory and classification, using the recreation opportunity spectrum concept.	3. Techniques for appraising and reducing ecological impacts.	3. Studies of use measurement and of redistribution techniques.	3. Monitor and evaluate effectiveness of plan.	3. Publish 2-year progress report.
4. Incorporate research inputs.	4. Use of opportunity spectrum concept and data in which it is based.	4. Pilot test remote sensing of wilderness and backcountry recreation resources.	4. Revise plan.	4. Publish final report.
5. Draft management plan.	5. Carrying capacity estimates by mgmt. zones.	5. Pilot test survey instruments to be used in national wilderness study.	5. Monitor and evaluate revised plan.	
6. Prepare EAR.	6. Redistribution of use.		6. Generalize what was learned to other planning situations.	
7. Prepare final management plan.	7. Other technology transfer.			

[a]The project will provide opportunities for past research results to be transferred directly to management as well as for continuing the research programs of the FS research work units involved. Many of the results of that research can also be inputted directly to management, and the team will be active in monitoring plan implementation and documenting the results of the project.

Special Endorsements:
1. Regional Forester, R02, will need to give release on Maroon Bells-Snowmass Wilderness management planning as follows: draft plan to be written by September 1, 1979 and final plan, with EAR, by October 1, 1979.
2. Those approving the plan will need to endorse the budget proposed for the period FY 78-83 to help assure the continuity of the project. Approvals should not be given without that endorsement.

EXHIBIT B: Proposed Budget (in M 1978 dollars)[a]

Unit	78	79	80	81	82	83
CSU	0	15[b]	10[b]	10[b]	0	0
RM-1901	35[c]	10	5	10	10	10
RM-R&D-4151	25	35[d]	10	5	5	5
INT-1903	10	20[e]	5	5	5	5
R-2	12[f]	40[g]	60[h]	60[h]	60[h]	60[h]
TOTALS	82	120	90	90	80	80

a. Budget excludes salary contribution of FS members of the R&D team.

b. McIntire-Stennis funds.

c. Includes $30 M year-end WO funds.

d. Includes funds for remote sensing pilot study.

e. Includes funds for pilot testing national household wilderness study survey instruments.

f. For Aspen RD to hire Wilderness Management planner.

g. For Aspen RD wilderness management planner and $20 M to be transferred to research for administrative studies on the project.

h. Estimates exclude GA-overhead allowances and $20 M must be transferred to research each year for plan monitoring.

Introduction

A demonstration wilderness-recreation resource planning and management project is proposed for the Maroon Bells-Snowmass Wilderness and surrounding National Forest land in Colorado. The project will be a cooperative effort between Colorado State University, Forest Service researchers, and Forest Service managers. Its purposes would be to:

(1) Develop a wilderness (and recreation) resource management plan for the Maroon Bells-Snowmass Wilderness (and contiguous areas of influence) by using the best technology available from management and research.

(2) Incorporate the concepts of a recreation opportunity spectrum and of recreation experience opportunities into the management plan and implement the plan using those concepts.

(3) Implement the plan, and monitor and evaluate its effectiveness with feedback derived from both the managers and users of the area.

(4) Help facilitate accomplishment of the missions of the FS research work units involved by providing opportunities to continue research as it is being applied.

The project will provide unusual long-term opportunities for the application, refinement, and testing of new technology developed both by managers and researchers. In addition, it will help facilitate development of new technology. Specifically, it will provide opportunities for:

(1) Incorporating results of ecological, social, and behavioral recreation research into a large, on-the-ground, resource inventory, planning and management effort.

(2) Incorporating innovative resource inventory, planning and management techniques into the management planning process for a nationally recognized area that receives heavy and diverse wilderness and other outdoor recreation uses.

(3) Committing in advance, and combining, both research and management skills to jointly solve wilderness-recreation planning and mangement problems such as: accurately measuring dispersed use; defining user demands for wilderness and recreation services to be provided by management; inventorying the potential of the area for providing different types of wilderness and recreation-related services; estimating the social and biological impacts of alternative types of uses; determining the biological, social, and managerial constraints on alternative user carrying capacities for the sub-areas studied; setting clear management objectives (with quantifiable targets) for each management unit within the area; determining appropriate use distribution and/or re-distribution strategies to employ; and otherwise managing the area to deliver the wilderness and recreation opportunities programmed for the area by the management plan that will be developed, approved (with thorough public review), implemented, and evaluated as the focus of the proposed demonstration effort.

(4) Assuring that adequate funds can be programmed in advance to implement the plan, given that innovative management actions will be prescribed for the area.

(5) Monitoring plan implementation over time to determine how the planning process and management of the study area can be improved and if generalizations of what has been learned can be made to other areas.

(6) Furthering the research programs of the research work units involved.

Justification

Two conditions make the proposed demonstration project timely and needed: (1) recent policy directives for the Forest Service and (2) the capability of the R&D team to accomplish the purposes of the proposed study.

Policy Directives

The Forest Service has always tried to administer the national forests within the difficult philosophy of multiple-use management. That philosophy, which recognizes wilderness and recreation-related uses, has been supported by much legislation during the past 15 years. Included is the Multiple-Use Sustained Yield Act, the Wilderness Preservation Act, the Environmental Policy Act, the Wild and Scenic Rivers Act, and amendments to the Clean Air and Clear Water acts. All of these acts help ensure that growing public demands for non-commodity uses of national forests are considered fully in allocation decisions. But it has been quite difficult to inventory, classify, and manage resources for these uses because of the diversity of values represented and the less tangible nature of these values. The proposed demonstration project will offer some new technology and techniques for dealing with these problems.

Other, more recent, policy directives also support the need for the demonstration project. The Forest and Rangeland Renewable Resources Planning Act of 1974 was passed in recognition of the need for more systematic planning and for greater continuity in programming and budget planning. As a result of the RPA, the FS has accepted the public's preference that it increase its role in the provision of dispersed outdoor recreation opportunities. This has meant some reorientation, especially in planning and management, with

which the proposed demonstration project can help. Specifically, the project will help ". . . provide a stronger technological foundation for recreation management [emphasis added] including studying recreation demands, supplies, trends, values, participation patterns, environmental impacts, and multiple-use planning" (p. 633, 1975 RPA Program Statement) and ". . . provide alternative systems of wilderness management" (p. 635).

The RPA program also led to a more explicit definition of "The Forest Service Roles in Outdoor Recreation" (FS, USDA, Program Aid No. 1205, issued January, 1978). The proposed demonstration project will help assure that all policies delineated in the "Role Statement" (Interim Manual Suppl. 2302) will be operationalized. In particular, the following policy on page 7 of the Role Statement will be put in effect: "Identify demonstration areas offering a significant spectrum of recreation. These areas will be used to demonstrate quality recreation management and services, apply and test research findings, demonstrate proven principles of recreation management, and offer a variety of training opportunities."

The proposed demonstration project is also supported by the National Forest Management Act of 1976, which requires research to monitor and evaluate the effects of each management system (Section 6) and to report annually on how research findings will be applied in National Forest Systems management. Also, Section 1402 ("Findings") of the Food and Agriculture Act of 1977 indicates that a strong research effort should be directed toward increasing knowledge that will lead to improved management and use of the Nation's natural and renewable resources.

Lastly, the demonstration project will: (1) focus on those amenity, wildlife, wilderness, and recreation-related issues identified as top priority in the preliminary Southern Rocky Mountain Area Guides statement, and (2) explicitly help meet the technology transfer policy directives

established by Chief McGuire in his January 16, 1978, memorandum entitled "Technology Transfer" (file designation 1250, Internal Cooperation).

(The remainder of the proposal is on
file at the Rocky Mountain Station)

APPENDIX C

POLICY GUIDELINES GOVERNING MANAGEMENT OF WILDERNESS RESOURCES

APPENDIX C

POLICY GUIDELINES GOVERNING MANAGEMENT OF WILDERNESS RESOURCES

A. The Wilderness Act

The basic management framework for National Forest Wilderness areas was determined by Congress in the Wilderness Act of September 3, 1964 (P.I. 88-577) when it declared the policy of designating federal lands for preservation and protection in their natural condition.

Congress has defined Wilderness in the following way:

> "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (P.I. 88-577, section 2(c)."

> ". . . shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness . . . (P.I. 88-577, Section 2(a)."

Congress stated that Wilderness Areas will be administered in such a manner so as to insure that the preservation of the wilderness character is dominant over all other purposes, values, or uses of the Wilderness. In addition the Wilderness Act prohibits, restricts, and makes provisions for certain uses. Generally there can be no permanent or temporary roads, no commercial enterprises, no use of motor vehicles or other motorized equipment, and no structures or installations. The Act does make provisions for the control of fire, insects, and diseases, and allows for mineral prospecting and mining, the grazing of livestock, and commercial services necessary for realizing the purposes of Wilderness Areas.

B. Department of Agriculture Regulations

Management direction from the Wilderness Act is further interpreted by U.S. Department of Agriculture Regulations 36 CFR 293.2-.17. Regulation 36 CFR 293.2 provides the following objectives for Wilderness Management by the Forest Service, a U.S.D.A. agency.

> "Except as otherwise provided in these regulations, National Forest Wilderness shall be so administered as to meet the public purposes of recreation, scenic, scientific, educational, conservation, and historical uses: and it shall also be administered in such a manner as to preserve and protect its wilderness character. In carrying out such purposes, National Forest Wilderness resources shall be managed to promote, perpetuate, and, where necessary, restore the wilderness character of the land and its specific values of solitude, physical and mental challenge, scientific study, inspiration and primitive recreation. To that end: (a) Natural ecological succession will be allowed to operate freely to the extent feasible. (b) Wilderness will be made available for human use to the optimum extent consistent with the maintenance of primitive conditions. (c) In resolving conflicts in resource use, wilderness values will be dominant to the extent not limited by the Wilderness Act, subsequent establishing legislation, or these regulations."

C. Forest Service Manual

Policy for National Forest Wilderness management is further elaborated in the Forest Service Manual, Chapter 2320. The following material, excerpted from the introduction to Chapter 2320, August, 1976, keynotes the management philosophy of Forest Service Wilderness:

> "In some respects, wilderness is considered by many as more than wild land with the characteristics described in the Act. To many, it is essentially a concept or ideal from which they can draw physical and spiritual refreshment or enjoy its benefits vicariously, never visiting such an area. Thus some wilderness values and criteria are often subjective, with meanings stemming from such variable factors as economic and social conditions or personal and institutional orientations. Values may also be influenced by background, education, training, cultural horizons, and day-to-day associations and experiences. This, in turn, means there may be significant differences in the values placed on specific characteristics by various individuals and organizations."
>
> "The manager, then, must face the paradox of wilderness as described by the Congress, as seen or felt by those whose values vary, and the uses and

activities permitted and prohibited in those areas by the Wilderness Act. He must solve the problem of use of the area while still keeping these parts of the natural world intact. Management of land as wilderness must be to ensure that, in every case, wilderness values are dominant, above compromise, and enduring. Management practices must be consistent over time and space, legally and administratively unimpeachable, and totally within the concept and philosophy of the intent of retaining an enduring resource of wilderness unimpaired for present and future use and enjoyment as wilderness."

"As defined in Section 2(c) of the Act, the wilderness resource is comprised of a number of elements. A wilderness must contain all of these elements and not merely a few or even a majority. The absence of or loss of one or more elements either seriously impairs or causes the loss of the wilderness resource. Managers must take care to consider and manage the resource in its entirety and not as a series of separate and distinct elements."

"There are many other uses and values of wilderness in addition to recreational use. These include scientific and educational uses, a benchmark for ecological studies, gene pools for animal and plant species, preservation of hierarchical and natural features, and others . . ."

"The term 'untrammeled' is defined as not trammeled, bound, or fettered; hence, figuratively, free; unlimited. In the context of the Wilderness Act, it means an area where man and his influence does not impede the free play of natural forces or interfere with natural successions in the ecosystems."

"One of the characteristics inherent in the wilderness resource as defined by the Wilderness Act is that it must offer outstanding opportunities for solitude or a primitive and unconfined type of recreation. The presence of large numbers of people in any area even though they may cause little or no damage to the soil, vegetation, water, or wildlife, erode and may eventually remove the wilderness resource from the land. A helicopter landing in a wilderness takes away solitude at the place for the time of the landing, although little physical evidence remains. Thus, the capacity of the wilderness to be used and enjoyed, yet preserved for future generations, is twofold: social, or anthropocentric, and ecological, or biocentric."

"The wilderness resource must also be protected so that the evidence of man's work is substantially unnoticeable. The Forest Service has accepted minimum-standard trails and some other improvements as being necessary to manage the wilderness resource. The wilderness resource must be protected from a proliferation of improvements, and those existing improvements not essential to protection of the wilderness resource must be removed. Complete justification will be required for retaining structures or other improvements in wilderness, as well as construction of new improvements or maintenance of existing improvements."

"All other more tangible natural resources, such as timber, water, and minerals, may also be found, to a greater or lesser extent, in designated wildernesses and are an integral part of the wilderness resource. Use of these resources must be in a manner compatible with the basic objective of maintaining the wilderness resource."

"Economy, convenience, commercial value, and comfort are not touchstones of administration of use of wilderness. In wilderness, a tree loses its commercial value; the livestock range cannot be manipulated, or utilized to the same degree as elsewhere; visitors must forego the security and creature comforts found in sites highly developed for their use; natural phenomena are less constrained."

"Public use for recreation purposes is usually one of the greatest demands placed on wilderness. The Wilderness Act makes it clear, however, that such recreation is but one of the purposes of the National Wilderness Preservation System. There are places within wilderness where unique values may dictate that recreation activities must be restricted or entirely excluded. The recreation-use capacity, a combination of the social and ecological elements, must also be given due consideration in determining how much public use is allowed. Public use will be administered to ensure that the wilderness resource is maintained."

"The wilderness resource is dominant in all management decisions where a choice must be made between wilderness values and visitor or any other activities."

"Uses and values vary between the several National Forest wildernesses and frequently vary among different parts of an individual wilderness. There may be wide differences in terrain and other geographic characteristics, climate, vegetation, and

wildlife. Historical patterns of use, local customs, and the traditional attitudes of visitors and interested non-visitors also differ between and within wildernesses. Consequently, activities that are accepted and management practices that are necessary and appropriate on one wilderness may be either unnecessary or unacceptable on others. While this may require some flexibility in the management and administration of the individual units of wilderness, all are part of one National Wilderness Preservation System and shall be consistently managed within the intent of the Wilderness Act."

To further implement congressional directives, the Forest Service has established specific wilderness management goals as defined in the Forest Service Manual. These goals reflect the types of benefits and values that are to be preserved in wilderness areas. The goals are to:

1. Maintain an enduring system of high-quality wilderness;
2. Perpetuate the wilderness resource;
3. Provide, to the extent consistent with items 1 and 2, opportunities for public use, enjoyment, and understanding of wildernesses, and the unique experiences dependent upon a wilderness setting;
4. Maintain plants and animals indigenous to the area;
5. Accommodate and administer those uses or activities which are of the type generally prohibited by the Wilderness Act, but which are specifically excepted by that Act, or subsequent establishing legislation, in such manner as to minimize their impact on the wilderness resource and values;
6. Maintain stable watersheds within constraints of the Wilderness Act;
7. Consider protection needs for populations of threatened or endangered species and their habitats in management of wilderness.

APPENDIX D

RECREATION SURVEY DATA

APPENDIX D

RECREATION SURVEY DATA

The tables in this appendix are based on survey research done cooperatively by Colorado State University and the Rocky Mountain Station. Tables #1 and #2 relate to total MBS wilderness visitation from June 22, 1978 to June 22, 1979. The estimated number of visitor-days for the MBS wilderness was approximately 70,000. The estimated number of recreation visitor days for the MBS wilderness planning area (wilderness and RARE II additions) was 135,000 for the same time period.

Because approximately 90 percent of the wilderness use is during July and August, the management plan focuses on the summer months, and the wilderness simulator, interview, and questionnaire data focused on the summer months. Tables 3-21 relate specifically to the recreation use and visitors between June 22 and September 10, 1978.

LIST OF TABLES

		Page
1.	Summary estimates of visitor days for the Maroon Bells-Snowmass Wilderness by seasonal time periods	D-4
2.	Estimated number of wilderness recreation parties, average party size, total number of people, average length of stay, and visitor days by CSU interview seasons for the Maroon Bells-Snowmass Wilderness	D-5
3.	Estimated number of parties, number of people, average length of stay (hours), total recreation hours, and visitor days for each zone in the Maroon Bells-Snowmass Wilderness (6/22-9/10/78) . . .	D-6
4.	The most important activity as a reason for visiting the area by MBS wilderness recreationists (6/22-9/10/78)	D-7
5.	Length of stay of MBS wilderness recreation parties	D-7
6.	Number of overnight sites used by MBS wilderness overnight recreationists (6/22-9/10/78)	D-8
7.	Percentage of parties with previous visits to the MBSW within the past 12 months (6/22-9/10/78)	D-8
8.	Number of overnight sites for MBSW overnight users (6/22-9/10/78) .	D-9
9.	Mean and median of the total number of people in one party that the users think the U.S.F.S. should permit in the MBS wilderness . .	D-9
10.	Percentage of MBS wilderness visitors who perceived the area was crowded (6/22-9/10/78)	D-9
11.	Length of time before trip that plans were made to visit MBSW (6/22-9/10/78)	D-10
12.	Length of time before trip that specific plans were made (Drainages to which lakes - mountains) (6/22-9/10/78)	D-10
13.	Comparison of means and standard deviations on decision factors used in campsite selection by the Maroon Bells-Snowmass wilderness and backcountry users (6/22-9/10/78)	D-11
14.	Average age of MBSW users (6/22-9/10/78)	D-12
15.	Description of household (6/22-9/10/78)	D-12

LIST OF TABLES - Continued

Page

16. Group composition of the MBS wilderness parties (6/22-9/10/78) . . . D-12

17. Composition of wilderness recreation parties visiting the MBSW by age and sex categories (6/22-9/10/78) D-13

18. Home origin of MBSW visitors by zip codes D-14

19. MBS wilderness campers' (N=268) reactions to situations they have experienced during their visit to the wilderness (6/22-9/10/78) . D-15

20. Percentage of responses for Possible Management Actions by MBS summer wilderness users (N=268) subdivided by users of Snowmass, Avalanche, Crater and Conundrum drainages (6/22-9/10/78) D-19

21. Percentages for responses to paired comparisons for MBS wilderness and backcountry users (6/22-9/10/78) D-23

22. Preferences for experience outcomes for MBSW users (summer, 1979) . D-24

23. Description of MBSW experience types (groups of users) and the recommended opportunity area visitation D-25

24. Parts of MBSW perceived to be too crowded D-26

25. Trail registration compliance D-27

Table 1. Summary estimates of visitor days for the Maroon Bells - Snowmass Wilderness by seasonal time periods.

	Estimated Visitor Days	Percentage of Total Visitor Days
June 22 - September 10, 1978[a]	53,834[a]	77.6
September 11 - September 22, 1978[a]	2,000[a]	2.9
September 23 - November 20, 1978[d]	6,987[a]	10.1
November 21 - May 1, 1979	51[a]	.1
May 1 - June 21, 1979	500[b]	.7
Commercially outfitted June 22, 1978 - June 22, 1979	6,000[c]	8.6
TOTAL	69,372	

[a]Based on CSU interview and road counter data.

[b]Estimated from available CSU interview and road counter data available as of June 1, 1979, and from discussions with U.S.F.S. Ranger Districts.

[c]Estimate obtained from U.S.F.S. Aspen Ranger District.

[d]Time period includes Colorado hunting seasons.

Table 2. Estimated number of wilderness recreation parties, average party size, total number of people, average length of stay, and visitor days by CSU interview seasons for the Maroon Bells - Snowmass Wilderness.

Season	Number of Wilderness Parties	Average Size of Party	Number of Wilderness Visitors	Average Length of Stay (Hours)	Visitor Days
Summer (6/22-9/10/78)	8,059	3.3	26,917	24.0	53,834
Fall (9/23-11/20/78)	1,733	2.5	4,369	19.2	6,987
Winter/Spring (11/22/78-4/1/79)	60	2.7	162	3.8	51
TOTAL	9,852		31,448		60,872

[a]This table is based on CSU interview data collected during the three interview seasons.

Table 3. Estimated number of parties, number of people, average length of stay (hours), total recreation hours, and visitor days for each zone in the Maroon Bells-Snowmass Wilderness (6/22-9/10/78).

Wilderness Zone (Area)	Number of Parties	Number of People[a]	Average Length of Stay (Hours)	Total Hours	Visitor Days
Avalanche Creek (W1)	800	2,672	30	80,160	6,680
Capitol Lake (W2)	750	2,505	30	80,160	6,680
Snowmass Creek (W3)	3,000	10,020	17	170,340	14,195
Snowmass Lake (W4)	1,600	5,344	20	106,880	8,907
Willow Lake (W5)	300	1,002	15	15,030	1,253
Crater Lake (W6)	5,800	19,372	4	77,488	6,457
West Maroon (W7)	650	2,171	16	34,736	2,895
East Maroon (W8)	350	1,169	8	9,352	780
Conundrum (W9)	600	2,004	35	70,140	5,845
TOTALS				644,296	53,692[b]

[a]Number of people was calculated by multiplying 3.34 (average size of wilderness parties) by the number of parties for each zone.

[b]Rounding off of estimates and the use of averages as multipliers account for the deviation between this visitor day estimate and the original estimate.

Table 6. Number of overnight sites used by MBS wilderness overnight recreationists (6/22-9/10/78).[a]

Overnight Sites	Percentage of Parties	Estimated Number of Parties
One Site	64	3,197
Two Sites	25	1,250
Three Sites	7	350
Four or More Sites	4	200

[a]This table only applies to MBSW recreation parties who indicated staying overnight.

Table 7. Percentage of parties with previous visits to the MBSW within the past 12 months (6/22-9/10/78).[a]

Previous Visits Within Past 12 Months	Percentage of Parties	Estimated Number of Parties
None	68	5,480
One Visit	17	1,370
Two Visits	4	322
Three Visits	3	242
Four or More Visits	8	645

[a]Approximately 59 percent of the MBSW recreationists had never visited the the study area previously.

Table 4. The most important activity as a reason for visiting the area by MBS wilderness recreationists (6/22-9/10/78).

Activity	Percentage of Wilderness Recreationists	Estimated Number of Parties
Hiking on Trails	43	3,465
Sightseeing	19	1,531
Camping Away from Auto	9	725
Other[a]	7	564
Camping Near Auto[b]	4	322
Photography	3	242
Stream Fishing	3	242
Technical Mountain Climbing	3	242
Hiking Off Trails	2	161

[a]The primary "other" activity was relaxing.

[b]Camping near auto was chosen as the most important activity by day users of the wilderness.

Table 5. Length of stay of MBS wilderness recreation parties.

Length of Stay	Percentage of Parties	Estimated Number of Parties
Day Users	38	3,062
One Night	19	1,531
Two Nights	24	1,934
Three Nights	11	886
Four or More Nights	8	645

Table 8. Number of overnight sites for MBSW overnight users by selected trailheads (6/22-9/10/78).

No. Sites	All Overnight Users	Snowmass	Avalanche	Crater	Conundrum
1	61.8	41.0	57.1	67.2	55.6
2	25.5	34.4	26.2	19.4	33.3
3	7.9	14.8	9.5	6.0	11.1
4	4.2	8.2	7.1	6.0	
5	0.6	1.6		1.5	

Table 9. Mean and median of the total number of people in one party that the users think the U.S.F.S. should permit in the MBS wilderness by selected trailheads.

	Snowmass		Avalanche		Crater		Conundrum	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Number U.S.F.S. Should Permit In One Party	8.1	7.8	8.7	7.9	8.1	6.5	11.0	5.0

Table 10. Percentage of MBS wilderness visitors who perceived the area was crowded by selected trailheads (6/22-9/10/78).

	Snowmass	Avalanche	Crater	Conundrum
Was Crowded	58.8	48.9	48.1	44.4

Table 11. Length of time before trip that plans were made to visit MBSW by selected trailheads (6/22-9/10/78).

	Snowmass	Avalanche	Crater	Conundrum
Same Day	1.5	2.3	6.9	11.1
Day Before	7.4	15.9	16.8	
2 Days - 2 Weeks	33.8	47.7	38.2	22.2
2 - 4 Weeks	19.1	11.4	13.0	
1 - 3 Months	25.0	13.6	13.0	33.3
Over 3 Months	13.0	9.1	12.2	33.3

Table 12. Length of time before trip that specific plans were made to travel specific routes to lakes, mountain passes, etc. (6/22-9/10/78).

	Snowmass	Avalanche	Crater	Conundrum
Same Day	19.1	26.7	44.2	11.1
Day Before	19.1	20.0	16.3	
2 Days - 2 Weeks	29.4	33.3	23.3	44.4
2 - 4 Weeks	11.8	2.2	6.2	
1 - 3 Months	13.2	11.1	5.4	22.2
Over 3 Months	7.4	6.7	4.9	22.2

Table 13. Comparison of means and standard deviations on decision factors used in campsite selection by the Maroon Bells-Snowmass wilderness and backcountry users (6/22-9/10/78).[a]

	Decisions	Wilderness (n=268)		Backcountry[c] (n=173)	
		Mean	S.D.	Mean	S.D.
1.	Camping near stream	4.0	1.0	4.1	1.0
2.	Camping near lake	2.9	1.2	3.0	1.3
3.	Camping in wooded area	3.6	1.2	3.8	1.0
4.	Camping near another campsite	1.4	1.1	1.3	.8
5.	Csmping above timberline	1.8	1.2	1.7	1.0
6.	Camping in scenic area	4.1	1.0	4.0	1.2
7.	Camping near firewood	3.2	1.1	3.4	1.3
8.	Camping near trail	2.1	1.2	2.3	1.3
9.	Camping away from people	4.7	1.2	4.3	1.0
10.	Camping near good fishing	2.2	1.4	2.5	1.5
11.	Other[b]	4.6	.9	4.6	.8

[a]Rated on a scale from 5 to 1: 5-extremely important; 1-not at all important.

[b]Other decision factors included clean area, near major peak, isolated area, and near wildlife.

[c]Refers to hikers visiting adjacent non-wilderness areas to the MBSW.

Table 14. Average age of MBSW users (6/22-9/10/78).

Area	Mean	Median
Snowmass	30.8	29.4
Avalanche	31.9	29.0
Crater	30.7	27.3
Conundrum	32.2	29.5

Table 15. Description of household (6/22-9/10/78).

Area	No Children	All Children Under 10	Some Children Over 10	All Children Over 10
Snowmass	60.7	9.8	9.8	19.7
Avalanche	63.4	19.5	4.9	12.2
Crater	61.2	9.0	6.0	23.9
Conundrum	66.7		22.2	11.1

Table 16. Group composition of the MBS wilderness parties (6/22-9/10/78).

Group Composition	Percentage of Parties	Estimated Number of Parties
Family	42	3,385
Friends	37	2,982
Family and Friends	10	806
Organized Group	1	81
Alone	10	806

Table 17. Composition of wilderness recreation parties visiting the MBSW by age and sex categories (6/22-9/10-78).

Age	Sex	Percent of Recreation Parties (N=8,059)	Number of Wilderness Recreation Parties
Under 15	Male	15[a]	1,209
	Female	10	806
16-20 Years	Male	9	725
	Female	5	403
21-35 Years	Male	67	5,400
	Female	49	3,949
36-55 Years	Male	22	1,773
	Female	16	1,289
Over 55 Years	Male	2	161
	Female	2	161

[a]Explanation: 15 percent of the wilderness recreation parties had at least one male under 15 years of age.

Table 18. Home origin of MBSW visitors by zip codes (6/22-9/10/78).

Home Origin	Percentages Subtotal	Total
East of Mississippi[a]	--	22.3
Colorado	--	49.6
Denver	20.4	
Eastern Plain	0.8	
Front Range	12.3	
Western Slope	16.1	
Western U.S.	--	7.2
California	4.0	
Hawaii	.4	
Oregon	.4	
Wyoming	.4	
Arizona	1.6	
New Mexico	.4	
Central U.S.	--	21.0
Iowa	3.2	
Minnesota	3.6	
Missouri	3.5	
North Dakota	.4	
Kansas	1.2	
Nebraska	.4	
Louisiana	1.6	
Oklahoma	2.4	
Texas	4.7	

[a]Minnesota included in Central U.S.

Table 19. MBS wilderness campers' (N=268) reactions to situations they have experienced during their visit to the wilderness (6/22-9/10/78).

Situation	Area	Adds	Neither	Detracts	Did Not Experience
1. Campsites heavily used by people or horses	Snowmass	5.0	10.0	66.6	18.3
	Avalanche	2.5		82.5	15.0
	Crater	6.2	6.0	62.4	25.4
	Conundrum		12.5	87.5	
2. Campsites close to lakes and trails	Snowmass	53.2	8.3	36.7	1.7
	Avalanche	45.0	10.0	50.0	5.0
	Crater	46.2	6.0	40.3	7.5
	Conundrum	33.3	22.2	44.4	
3. Few places to camp	Snowmass	6.6	24.6	32.8	36.1
	Avalanche	17.5	17.5	35.0	30.0
	Crater	13.6	16.7	34.3	39.4
	Conundrum		28.6	14.3	57.1
4. Firerings filled with garbage (foil, cans, etc.)	Snowmass		4.9	67.2	27.9
	Avalanche		5.0	72.5	22.5
	Crater		3.0	64.2	32.8
	Conundrum		12.5	62.5	25.0
5. Many firerings	Snowmass	10.0	8.3	60.0	21.7
	Avalanche		17.5	65.0	17.5
	Crater	6.0	11.9	55.2	26.9
	Conundrum		25.0	50.0	25.0
6. Campsites or firerings above timberline	Snowmass	8.2	14.8	26.2	50.8
	Avalanche	12.8	23.1	35.9	28.2
	Crater	9.0	13.4	17.9	59.7
	Conundrum		28.6	28.6	42.9
7. Campsites that were difficult to locate	Snowmass	18.4	16.7	13.4	51.7
	Avalanche	18.4	25.2	10.2	46.2
	Crater	18.0	17.9	10.4	53.7
	Conundrum	14.3	28.6	14.3	42.9
8. Many people using the area	Snowmass	1.6	4.9	77.1	16.4
	Avalanche	2.5	7.5	72.5	17.5
	Crater	1.5	7.5	71.6	19.4
	Conundrum		14.3	85.7	
9. Many day-use people in wilderness	Snowmass		34.4	49.2	16.4
	Avalanche	5.1	30.8	38.5	25.6
	Crater		26.9	61.2	11.9
	Conundrum		50.0	33.3	16.7

Table 19. Continued.

Situation	Area	Adds	Neither	Detracts	Did Not Experience
10. Many people camping nearby	Snowmass	1.7	10.0	80.0	18.3
	Avalanche	2.6	5.1	71.8	20.5
	Crater	1.5	10.4	61.2	26.9
	Conundrum		12.5	67.5	
11. Many horse parties using area	Snowmass	1.7	8.3	48.3	41.7
	Avalanche		7.5	50.0	42.5
	Crater		4.5	31.3	64.2
	Conundrum		14.3	28.6	57.1
12. Evidence of improper sanitation	Snowmass		4.9	45.9	49.2
	Avalanche			53.8	46.2
	Crater		4.5	35.8	59.7
	Conundrum		14.3	28.6	57.1
13. Many large parties of people	Snowmass	1.6	4.9	39.4	54.1
	Avalanche		5.1	51.3	43.6
	Crater		7.5	35.8	56.7
	Conundrum		14.3	14.3	71.4
14. Horses damaging fragile areas	Snowmass	1.7	6.7	31.6	60.0
	Avalanche		2.5	52.5	45.0
	Crater		4.5	25.4	70.1
	Conundrum			28.6	71.4
15. Numerous information signs in wilderness	Snowmass	9.8	21.3	21.4	47.5
	Avalanche	23.0	10.3	69.2	35.9
	Crater	29.8	11.9	15.0	43.3
	Conundrum	57.1	14.3		28.6
16. Few directional signs at trail junctions	Snowmass	54.1	19.7	22.9	11.5
	Avalanche	29.0	15.8	44.7	10.5
	Crater	37.2	13.4	28.5	20.9
	Conundrum	12.5	25.0	50.0	12.5
17. Few signs along trails	Snowmass	45.9	19.7	24.6	9.8
	Avalanche	34.2	28.9	23.7	13.2
	Crater	40.2	23.9	19.5	16.4
	Conundrum	25.0	25.0	25.0	25.0
18. Signs indicating designated campsites that were difficult to find	Snowmass	18.1	19.7	8.1	54.1
	Avalanche	12.8	23.1	10.3	53.8
	Crater	17.9	17.9	3.0	61.2
	Conundrum		28.6		71.4
19. Some trails were difficult to locate	Snowmass	20.0	13.3	28.3	38.3
	Avlanche	25.6	25.6	28.3	20.5
	Crater	10.5	10.4	26.9	52.2
	Conundrum		28.6	14.3	57.1

Table 19. Continued.

Situation	Area	Adds	Neither	Detracts	Did Not Experience
20. Obstacles (logs, rocks) on trails	Snowmass	26.3	32.8	19.6	21.3
	Avalanche	35.8	35.9	15.5	12.8
	Crater	28.3	26.9	13.5	31.3
	Conundrum	12.5	50.0		12.5
21. Treacherous stream crossings	Snowmass	33.8	13.6	18.7	33.9
	Avalanche	43.0	22.0	9.7	29.3
	Crater	29.9	13.6	13.6	43.9
	Conundrum	50.0	25.0		25.0
22. Rutted (eroded) trails	Snowmass	10.0	26.7	38.3	25.0
	Avalanche	5.0	12.5	55.0	27.5
	Crater	6.0	31.8	33.4	28.8
	Conundrum		16.7	33.3	50.0
23. No opportunity for cross-country (off-trail) travel	Snowmass	2.4	28.3	21.7	46.7
	Avalanche	5.0	26.8	19.4	48.8
	Crater	7.5	19.7	16.7	56.1
	Conundrum		50.0		50.0
24. Many trails in wilderness	Snowmass	11.9	25.4	20.4	42.4
	Avalanche	18.0	17.9	30.8	33.3
	Crater	20.1	16.9	29.2	33.8
	Conundrum	50.1	33.3	16.7	
25. Little information on trail system	Snowmass	5.0	37.3	27.2	30.5
	Avalanche	20.0	32.5	32.5	15.0
	Crater	6.0	25.8	34.9	33.3
	Conundrum	16.7	33.3	33.3	16.7
26. Little information about popular camping areas	Snowmass	16.7	28.3	15.0	40.0
	Avalanche	23.8	31.6	23.5	21.1
	Crater	16.6	28.8	15.2	39.4
	Conundrum		50.0		50.0
27. Little information about more remote areas of wilderness	Snowmass	18.4	21.7	28.2	31.7
	Avalanche	25.0	25.0	37.5	12.5
	Crater	16.6	19.7	36.4	27.3
	Conundrum	16.7	33.3		50.0
28. Little information on area's natural environment (plants, wildlife, geology)	Snowmass	4.9	26.7	33.4	35.0
	Avalanche	5.0	27.5	55.0	12.5
	Crater	6.0	22.7	47.1	24.2
	Conundrum		42.9	14.3	42.9
29. Little information about adjacent back-country areas	Snowmass	3.3	33.9	30.6	32.2
	Avalanche	8.1	21.6	57.1	16.2
	Crater	9.0	21.2	42.5	27.3
	Conundrum		42.9	14.3	42.9

Table 19. Continued.

Situation	Area	Adds	Neither	Detracts	Did Not Experience
30. Dogs in wilderness	Snowmass	4.6	25.0	38.7	31.7
	Avalanche	10.0	27.5	42.5	20.0
	Crater	6.2	20.0	28.3	41.5
	Conundrum	16.7	16.7	50.0	16.7
31. Dogs chasing wildlife (squirrels, deer)	Snowmass	1.7	3.3	22.7	73.3
	Avalanche	5.0	5.0	32.5	57.5
	Crater	1.5	6.1	21.2	71.2
	Conundrum			16.7	83.3
32. Dogs running up to (scaring) people	Snowmass		6.7	20.0	73.3
	Avalanche	2.4	4.9	31.7	61.0
	Crater		7.6	22.6	68.2
	Conundrum			33.4	66.7
33. Dogs barking	Snowmass	1.7	6.7	29.9	61.7
	Avalanche	5.0	5.0	47.5	42.5
	Crater		7.6	36.3	56.1
	Conundrum			40.0	60.0
34. Not enough patrolling by wilderness guards	Snowmass	11.7	33.3	16.7	38.3
	Avalanche	12.9	28.2	23.0	35.9
	Crater	14.2	31.3	17.0	37.5
	Conundrum	14.3	14.3	14.3	57.1
35. Strict regulations concerning camping in wilderness	Snowmass	25.0	25.0	25.0	25.0
	Avalanche	35.0	20.0	10.0	35.0
	Crater	39.6	19.7	18.1	22.7
	Conundrum	28.6	14.3	28.6	28.6
36. Airplanes flying low over wilderness	Snowmass		11.7	21.6	66.7
	Avalanche		7.5	30.0	62.5
	Crater		10.6	13.5	75.8
	Conundrum		16.7	33.3	50.0
37. The wilderness is small	Snowmass	1.7	33.9	28.8	35.6
	Avalanche	2.6	20.5	43.6	33.3
	Crater	1.5	23.1	43.1	32.3
	Conundrum	16.7	50.0		33.3
38. Man-made structures (firerings, cabins) in wilderness	Snowmass	1.7	23.3	35.0	40.0
	Avalanche	7.7	17.9	46.2	28.2
	Crater	3.0	20.0	37.0	40.0
	Conundrum	33.4	16.7	33.3	16.7

Table 20. Percentage of responses for Possible Management Actions by MBS summer wilderness users (N=268) subdivided by users of Snowmass, Avalanche, Crater and Conundrum drainages (6/22-9/10/78).[a]

Possible Management Actions	Area	Favor	Neutral	Oppose
1. Have designated campsites at heavily used camping areas	Snowmass	83.4	1.7	14.9
	Avalanche	66.6	4.8	7.1
	Crater	86.4	6.1	7.6
	Conundrum	88.8		11.1
2. Prohibit camping within 200 feet of heavily used lakes	Snowmass	86.7	3.3	10.0
	Avalanche	73.8	2.4	11.9
	Crater	91.9	7.6	11.1
	Conundrum	88.8		21.7
3. Prohibit campfires in some areas	Snowmass	68.4	10.0	21.7
	Avalanche	82.9	4.9	12.2
	Crater	74.2	13.6	12.1
	Conundrum	75.0		25.0
4. Have areas where no overnight camping is permitted	Snowmass	49.1	13.6	37.3
	Avalanche	50.0	21.4	28.6
	Crater	59.1	16.7	24.2
	Conundrum	50.0	25.0	25.0
5. Prohibit camping within 100 feet of streams	Snowmass	70.0	6.7	23.3
	Avalanche	59.5	7.1	33.3
	Crater	71.2	7.6	21.2
	Conundrum	55.6		44.4
6. Establish more designated campsites at heavily used camping areas	Snowmass	57.5	10.2	32.3
	Avalanche	70.7	12.2	17.1
	Crater	65.2	9.1	25.8
	Conundrum	75.0	12.5	12.5
7. Pronibit camping at overused campsites	Snowmass	63.6	9.1	27.3
	Avalanche	70.7	9.8	19.5
	Crater	64.4	3.4	32.2
	Conundrum	77.3	11.1	11.1
8. Pronibit fires above timber-line	Snowmass	38.3	30.0	31.7
	Avalanche	50.0	23.8	26.2
	Crater	45.5	33.3	21.2
	Conundrum	75.0		25.0
9. Establish a daily visitor entry limitation	Snowmass	45.7	10.2	44.1
	Avalanche	48.8	19.5	31.7
	Crater	55.3	17.2	37.5
	Conundrum	37.5	12.5	50.0
10. Limit the number of people entering the wilderness	Snowmass	51.6	6.7	41.7
	Avalanche	53.7	14.6	31.7
	Crater	52.3	13.8	33.8
	Conundrum	37.5	12.5	50.0

[a] The response format was on a 7-point scale (7=most strongly favor, 4=neutral, 1=most strongly oppose).

Table 20. Continued.

Possible Management Actions	Area	Favor	Neutral	Oppose
11. Establish a permit system that regulates the number of camping parties in heavily used areas	Snowmass	71.1	3.4	25.5
	Avalanche	64.3	14.3	21.4
	Crater	69.2	9.1	22.7
	Conundrum	50.0		50.0
12. Restrict party size to ten or less people	Snowmass	88.3	5.0	6.7
	Avalanche	81.0	7.1	11.9
	Crater	81.8	9.1	9.1
	Conundrum	88.9	11.1	
13. Prohibit horse or pack animals in heavily used areas	Snowmass	77.9	6.8	15.3
	Avalanche	81.0	7.1	11.9
	Crater	81.8	9.1	9.1
	Conundrum	87.5		
14. Establish trails only for horse travel/discourage hiking use	Snowmass	36.5	15.5	48.0
	Avalanche	42.9	14.3	42.9
	Crater	36.4	18.2	45.5
	Conundrum	44.4		55.6
15. Limit the number of horse parties using heavily used areas	Snowmass	81.3	8.5	10.2
	Avalanche	85.7	4.8	9.5
	Crater	91.9	6.1	3.0
	Conundrum	88.9		11.1
16. Remove all signs from wilderness	Snowmass	10.0	16.7	73.3
	Avalanche	35.7	21.4	42.9
	Crater	10.6	24.2	65.2
	Conundrum			100.0
17. Limit signing to trail junctions only	Snowmass	58.4	20.0	21.6
	Avalanche	73.8	9.5	16.7
	Crater	50.8	27.7	21.5
	Conundrum	77.8		22.2
18. Use rock cairns (rock piles) to indicate designated campsites and trail locations	Snowmass	56.7	38.3	5.0
	Avalanche	76.2	16.7	7.1
	Crater	53.0	37.9	9.1
	Conundrum	87.5	12.5	
19. Have as few informational signs as possible in the wilderness	Snowmass	50.4	26.7	23.3
	Avalanche	69.0	16.7	14.3
	Crater	47.0	18.2	33.3
	Conundrum	87.5		12.5
20. Eliminate all signs from the less popular, more remote areas of wilderness	Snowmass	47.4	15.3	37.3
	Avalanche	66.6	9.5	23.8
	Crater	47.7	20.0	32.3
	Conundrum	25.0	50.0	25.0

Table 20. Continued.

Possible Management Actions	Area	Favor	Neutral	Oppose
21. Display accurate maps and wilderness regulations at trailheads	Snowmass	88.3	6.7	5.0
	Avalanche	85.7	9.5	4.1
	Crater	86.4	10.6	3.0
	Conundrum	100.0		
22. Establish campsites near but not in wilderness	Snowmass	40.6	16.9	42.5
	Avalanche	45.2	33.3	21.4
	Crater	50.8	23.1	26.2
	Conundrum	71.4	28.6	
23. Maintain trails free of obstacles (logs, rocks)	Snowmass	48.3	26.7	35.0
	Avalanche	33.3	16.7	50.0
	Crater	28.8	36.4	34.8
	Conundrum	62.5	12.5	25.0
24. Have bridges only where stream crossing is dangerous	Snowmass	81.7	10.0	8.3
	Avalanche	78.6	16.7	4.8
	Crater	78.8	15.2	6.1
	Conundrum	100.0		
25. Provide loop-trails for day users	Snowmass	69.9	16.7	13.4
	Avalanche	73.8	16.7	9.5
	Crater	80.3	13.6	6.1
	Conundrum	88.9	11.1	
26. Establish clearly marked trails to every lake	Snowmass	31.1	11.5	57.4
	Avalanche	38.1	16.7	45.2
	Crater	55.2	10.4	34.3
	Conundrum	28.6	14.3	57.1
27. Provide outside (pit toilet) privies near popular camping areas	Snowmass	54.1	11.5	34.4
	Avalanche	67.5	10.0	22.5
	Crater	68.7	9.0	22.4
	Conundrum	71.4		28.6
28. Maintain no trail bridges	Snowmass	15.3	22.0	62.7
	Avalanche	35.0	20.0	45.0
	Crater	13.4	35.8	50.7
	Conundrum		28.6	71.4
29. Provide a pamphlet describing the trail system and heavy use areas	Snowmass	78.7	14.8	6.6
	Avalanche	76.2	7.1	16.7
	Crater	76.1	14.9	9.0
	Conundrum	75.0	25.0	
30. Provide educational material on the natural environment	Snowmass	85.2	13.1	1.6
	Avalanche	83.3	9.5	7.1
	Crater	89.1	10.4	1.5
	Conundrum	87.5	12.5	
31. Provide an accurate map on the natural environment	Snowmass	82.0	13.1	4.9
	Avalanche	73.8	16.7	9.5
	Crater	82.1	16.4	1.5
	Conundrum	87.5	12.5	

Table 20. Continued.

Possible Management Actions	Area	Favor	Neutral	Oppose
32. Provide a description of what recreation experiences might be available and where in the wilderness	Snowmass	63.3	26.7	10.0
	Avalanche	64.3	16.7	19.0
	Crater	71.2	21.2	7.6
	Conundrum	87.5	12.5	
33. Provide recreational information about nearby backcountry areas outside the wilderness	Snowmass	73.8	19.7	6.6
	Avalanche	81.0	14.3	4.8
	Crater	79.1	13.4	7.5
	Conundrum	100.0		
34. Provide better information about wilderness regulations	Snowmass	73.8	23.0	3.3
	Avalanche	90.2	7.3	2.4
	Crater	74.2	21.2	4.5
	Conundrum	85.7	14.3	
35. Employ wilderness guards to patrol wilderness	Snowmass	50.8	21.3	27.9
	Avalanche	61.0	14.6	24.4
	Crater	54.5	24.2	21.2
	Conundrum	71.4		28.6
36. Levy fines for intentional violations	Snowmass	88.5	3.3	8.2
	Avalanche	95.1		4.9
	Crater	89.4	3.0	7.6
	Conundrum	75.0	12.5	12.5
37. Prohibit dogs in the wilderness	Snowmass	50.0	20.0	30.0
	Avalanche	52.3	16.7	31.0
	Crater	53.0	19.7	27.3
	Conundrum	42.9	28.6	28.6
38. Enforce a "leash law" for dogs	Snowmass	49.2	20.3	30.5
	Avalanche	54.8	26.2	19.0
	Crater	55.4	15.4	29.2
	Conundrum	57.1		42.9
39. Manage the wilderness for specific recreational experiences of value to users of the area	Snowmass	53.3	26.7	20.0
	Avalanche	51.2	24.4	24.4
	Crater	44.6	35.4	20.0
	Conundrum	28.5	57.1	14.3
40. Require visitors to take a three-hour course and pass a test on how to visit a wilderness without damaging the area	Snowmass	28.3	16.7	55.0
	Avalanche	35.7	9.5	54.8
	Crater	25.4	11.9	62.7
	Conundrum	33.3		66.7
41. Require visitors to obtain a permit which indicates each wilderness campsite they plan to occupy and requires them to follow their schedule	Snowmass	14.8	4.9	80.3
	Avalanche	12.2	9.8	78.0
	Crater	23.9	9.0	67.2
	Conundrum	14.3		85.7

Table 21. Percentages for responses to paired comparisons for MBS wilderness and backcountry users (6/22-9/10/78).

Which Would You Prefer:	MBSW (n = 269)	Backcountry (n = 173)
1. __ Passing one party of 5 hikers on a trail	93.0	82.2
__ Passing one party of 5 horseback riders on trail	6.6	17.8
2. __ Passing two parties of 5 hikers on trail	81.3	79.6
__ Passing one party of 10 hikers on trail	13.1	20.4
3. __ Passing one party of 5 horseback riders on trail	38.4	45.8
__ Passing one party of 10 hikers on trail	61.2	54.2
4. __ Passing one party of 5 horseback riders on trail	31.8	40.1
__ Passing two parties of 5 hikers on trail	67.5	59.9
5. __ Camping near two parties of 5 people	80.1	81.0
__ Camping near one party of 10 people	19.1	19.0
6. __ Camping near one party of 10 people	1.6	2.4
__ Camping near one party of 5 people	97.6	97.6
7. __ Camping within hearing of other people	28.4	35.4
__ Camping within sight of other people	70.8	64.6
8. __ Passing one party of 5 people on trail	94.9	89.0
__ Camping near one party of 5 people	4.7	11.0

Table 22. Preferences for experience outcomes for MBSW users (summer,1978).

Importance to Satisfaction	Outcome Domains	Mean Score[a]
Strongly Added to Satisfaction 3.4 - 2.5	Scenery	3.6
	General Nature Experience	3.3
	Escape Daily Routine	3.0
	Escape Role Overloads	2.9
	Escape Physical Stressors	2.9
	Tranquility	2.9
	Exploration	2.7
	Learning About Nature	2.7
	Exercise/Physical Fitness	2.7
	Slow Down Mentally	2.7
	Escape Crowds	2.7
	General Learning	2.5
Moderately Added to Satisfaction 1.5 - 2.4	Being w/Similar People	2.2
	Geography of the Area	2.2
	Tension Release	2.2
	Reinforcing Self-Image	2.2
	Skill Development	2.2
	Competence Testing	2.1
	Autonomy	2.1
	Family Togetherness	2.0
	Being w/Friends	2.0
	Introspection	2.0
	Privacy	2.0
	Seeking Stimulation	2.0
	Independence	2.0
	Teaching/Sharing Skills	1.6
	Security	1.6
Slightly Added to Satisfaction .5 - 1.4	Equipment	1.4
	Spiritual	1.4
	Nostalgia	1.2
	Meeting New People	0.9
	Physical Rest	0.6
Neither Added Nor Detracted to Satisfaction -.5 - +4	Risk Moderation	0.4
	Taking Risks	0.1
	Risk Avoidance	0.1
	Leading Others	-0.4
Slightly Detracted to Satisfaction -1.5 - -.6	Social Recognition	-0.7
	Observing Other People	-1.4

[a]A 9-point response scale was used: +4 "most strongly added;" +3 "strongly added;" +2 "moderately added;" +1 "slightly added;" 0 "neither added nor detracted;" -1 "slightly detracted;" -2 "moderately detracted;" -3 "strongly detracted;" -4 "most strongly detracted" to a satisfying recreation experience.

Table 23. Description of MBSW user experience types and the recommended opportunity area visitation.[a]

Experience Types	Percent of Visitors	Description of Experience	Recommended Wilderness Opportunity Area Visitation
I	23	Opportunities for scenery and family togetherness are critical. Privacy and introspection is relatively unimportant. Risk taking detracted from this experience. This type is further described as an older, married group of visitors.	Transition
II	16	Opportunities for scenery is critical and to a lesser extent meeting/observing other people. Relative to the other experience types, opportunities for exploration, exercise/physical fitness, escape social/physical pressure, freedom, and achievement are unimportant. This type is further described as predominately males living in urban areas and having considerable wilderness experience.	Transition/Semi-primitive
III	45	Opportunities for exploration, exercise/physical fitness, freedom, achievement, skill development and learning, and introspection are important. Relative to the other experience types, opportunities for risk taking is important. This type is further described as young, single males living in urban areas.	Semi-primitive/Primitive
IV	16	Opportunities for privacy and introspection are critical and to a lesser extent, although still important, are opportunities for exercise/physical fitness, skill development, freedom, achievement, being with friends, and learning about nature. This type is further described as living in rural areas.	Primitive/Pristine

[a]This information is based on Dr. Deborah J. Allen's dissertation (1979) entitled Wilderness User Preferences for Psychological Outcomes and Setting Attributes, Department of Recreation Resources, Colorado State University, Fort Collins, Colorado.

Table 24. Parts of MBSW perceived to be too crowded (summer, 1978).

Area	Number of Responses[a]
Snowmass Lake	53
Maroon Lake	32
Crater Lake	18
Parking Areas	14
Camping Areas	12
Everywhere	10
Trails	9
Conundrum	7
Beaver Ponds	4
Maroon Bells Campground	3
Too Many Cows	2
Avalanche Lake	2
Thomas Lake	1
Lakes Near Bus Drop-Off	1
Bottom of Trail	1
Sopris Creek	1
Cathedral Lake	1
Bridges	1
All Lakes	1
Capitol Peaks	1
Bus Area	1
Lake Geneva	1
Capitol Lake	1
Snowmass Trail	1

[a]Caution should be taken in interpreting these data because all people did not visit all areas.

Table 25. Trail registration compliance for three trailheads accessing the Maroon Bells-Snowmass Wilderness, Colorado (July-August, 1979).

Trailheads	Percent of Overnight Parties Registering	Percent of Day-Use Parties Registering	Percent of All Parties Registering
Snowmass Creek	55.6 (25 ÷ 45)	19.6 (10 ÷ 51)	36.5 (35 ÷ 96)
Crater Lake	50.0 (8 ÷ 16)	32.6 (15 ÷ 46)	37.1 (23 ÷ 62)
Conundrum Creek	54.8 (17 ÷ 31)	50.0 (7 ÷ 14)	53.3 (24 ÷ 45)
TOTAL	54.3 (50 ÷ 92)	28.8 (32 ÷ 111)	40.4 (82 ÷ 203)

APPENDIX E

MANAGING WILDERNESS USING THE WILDERNESS OPPORTUNITY SPECTRUM CONCEPT

APPENDIX E

MANAGING WILDERNESS USING THE WILDERNESS OPPORTUNITY SPECTRUM CONCEPT

As described in the policy guideline section, wilderness resources provide many values and benefits. One of these several sets of values and benefits stems from the recreational use of wilderness. Except for the fact that wilderness-related recreation usually has the connotation of being primitive in nature, it basically is not different from other types of recreation. Because recreational uses of wilderness are so significant, and growing in magnitude, it is important to discuss this use in some detail and explain the recreation management system being used in the MBSW.

The Nationwide Comprehensive Outdoor Recreation Plan cites social and psychological benefits as important justifications for government involvement. Recreation, it suggests, provides "direct satisfaction to the individual" and "enhancement of the overall mental and physical quality of the individual--an investment in human capital adding to the productivity of the individual and society." Seen from this perspective, recreation can be understood as a human experience which is expressed through various activities in diverse environments.

The purpose of recreation management planning, including that of wilderness recreation planning, is to progress through a systematic process to management decisions directed toward delivery of recreation opportunities which enable realization of individual and societal benefits.

If one accepts that opportunities to realize individual and societal benefits are important outputs of recreation management, one accepts that a behavioral science perspective to recreation planning and management is important. This perspective suggests that management actions are undertaken to deliver desired recreation opportunities. But, what is a recreation opportunity? At least three components of a recreation opportunity have been identified. There is an activity component, a setting component, and an experience component. Taken together, these components are linked in that people engage in specific activities in specific settings to realize immediate outcomes which lead to individual and societal benefits. This is true of the recreational uses of wilderness areas or of downtown parks.

These three components of recreation opportunities can be combined in various ways and the combinations can be fit into a spectrum of recreation opportunities. The Recreation Opportunity Spectrum[1] (ROS) concept, therefore, is based on the logic that a recreation opportunity can be defined as the opportunity to engage in a specific activity (such as wilderness backpacking) in a specific environmental setting to realize a specific type of desired experience (such as a backpacking experience in which one enjoys solitude, tranquility, the scenic beauty of the area, the natural surroundings, gets some challenging exercise and perhaps even takes a few risks). Research has made good progress on identifying and quantifying the types of experiences that are sought and expected by

participants in different recreation activities in different environments, including different types of wilderness environments. Using that research and experience of managers, an ROS has been developed which enables inventory of physical resources or environmental settings, including wilderness, in terms of the types of experience and activity opportunities that are appropriate for six different and general recreation opportunity classes that have been identified. These classes have been labeled modern-urban, rural, roaded natural, semi-primitive motorized, semi-primitive non-motorized, and primitive. Few if any of the four former opportunity classes are found in wilderness areas. Primitive and semi-primitive non-motorized classes were identified in the MBSW.

These two classes and wilderness policy directives define the types of wilderness recreation activities and experiences that are appropriate. In order to (1) mesh wilderness recreational use with other values inherent in wilderness, (2) to define more clearly the array of wilderness opportunities available, and (3) to identify management actions consistent with different types of opportunities, the two ROS classes were each subdivided into two wilderness opportunity classes by relating all wilderness values to the 4-class spectrum of wilderness opportunities. These four wilderness opportunity classes were labelled transition, semi-primitive, primitive, and pristine. Management prescriptions were written (#2, 3, 4, and 5, respectively) to resolve differentially for each class the issues, concerns, and opportunities identified for the MBSW.

Clear specification of the appropriate recreation and other wilderness opportunities to be produced within each of the four wilderness opportunity classes for the MBSW provided guidelines for choosing appropriate management actions for each class. For some opportunities along the wilderness opportunity spectrum, the type and/or intensity of management actions might vary. Use of the wilderness opportunity spectrum concept will assure that wilderness recreation opportunities are compatible with other wilderness opportunities of a non-recreation nature.

In essence, what has been done is that the logic of the ROS system has been extended to incorporate values beyond recreation to develop a wilderness opportunity spectrum (WOS) that considers all wilderness-related benefits and values. The WOS concept can then be used to stratify or zone wilderness areas into administrative units to which different management actions can be assigned to preserve a range of wilderness opportunities or range of options for on-site and off-site wilderness users.

[1]For additional information about the Recreation Opportunity Spectrum, see:

1. Driver, B.L. and P.J. Brown. 1978. The opportunity spectrum concept and behavioral information in outdoor recreation resource supply inventories: a rationale. Integrated Inventories of Renewable Natural Resources: In Proceedings of the Workshop. USDA Forest Service, Gen Tech. Report RM-55. Fort Collins, Colorado.

2. Brown, P.J., B.L. Driver, and C. McConnell. 1978. The opportunity spectrum concept in outdoor recreation supply inventories: background and application. Integrated Inventories of Renewable Natural Resources: In Proceedings of the Workshop. USDA Forest Service, Gen. Tech. Report RM-55. Fort Collins, Colorado.

3. Brown, P.J., B.L. Driver, D. Bruns, and C. McConnell. 1979. The outdoor recreation opportunity spectrum in wildland recreation planning: development and applications. In these proceedings: Recreation Planning '79. Snowbird, Utah.

APPENDIX F

TREND AND DEMAND ANALYSIS

APPENDIX F

TREND AND DEMAND ANALYSIS

The purpose of this report is to estimate demand for the planning period of 1980-85. It examines the recreation visitation trends and demand for the MBSW and is divided into two sections entitled trend analysis and demand analysis. The trend analysis examines recreation visitation trends based on the (1) Recreation Information Management (RIM) system, (2) 1980 RPA Assessment Draft, (3) statistical population abstracts, and (4) the potential gasoline pricing and availability impacts. Based on the trend analysis, the demand analysis indicates the MBSW demand projection; that is, the projected consumption of use or visitation to the area.

Trend Analysis

RIM

Table 1 shows the estimated recreation visits and visitor days for 1965, 1970, 1975-77.[1] Also, the percentage increase in visits and visitor days between the respective years is indicated. Because of the different means by which estimates were derived and their relative accuracy, it is recommended that caution be taken in interpretation.

Table 1. Estimated recreation visits and visitor days for the Maroon Bells-Snowmass Wilderness by years.[A]

Year	Estimated Recreation Visits	Percentage Change Between Years	Estimated Visitor Days	Percentage Change Between Years
1965	15,500	--------	10,800	--------
1975	31,000	+100 (10%/yr)	64,100	+493% (49.3%/yr)
1976	31,100	+.03%	70,400	+10%
1977	33,500	+7%	83,600	+18%

[A]These data were compiled from the Recreation Information Management System (RIM).

[1]1965 was the first year that RIM data is on record for the Maroon Bells-Snowmass Wilderness.

Estimated recreation visits in 1965 were 15,500. There was an increase of 18,000 visits over the 12-year period ending in 1977. The largest percentage change was the increase between 1965-1975 when there was a 10 percent average annual increase. Estimated recreation visitor days increased from 10,800 to 83,600 between 1965-1977. The largest percentage change was between 1965-1975 when there was a 49 percent average annual increase.

Table 2 shows the relative length of stay for each recreation visit over the respective years. The relative increase in length of stays between 1965 and the remaining years explains the eight-fold increase in visitor days from 1965 to 1977 indicated in Table 1. Table 2 suggests the majority of visits in 1965 were day-visits as opposed to overnight-visits in the remaining years. The average length of stay per visit in 1977 was 2.50 visitor days, or 30 hours.

Table 2. Estimated recreation days per visit for the Maroon Bell-Snowmass Wilderness by years.[A]

Year	Visitor Days/Visits	Number of Visitor Days Per Visit
1965	10,800/15,500	0.70
1975	64,100/31,000	2.07
1976	70,400/31,100	2.26
1977	83,600/33,500	2.50

[A]Based on RIM data shown in Table 1.

Table 3 indicates the average annual percentage increase in recreation visits and visitor days between 1965-1975 and 1975-1977. Examination of the two time periods would suggest that the popularity (visits and visitor days) of the Maroon Bells-Snowmass Wilderness catapulted between 1965-1975. Of significance to the Maroon Bells-Snowmass Wilderness management direction presently being developed is that recreation visits and visitor days have been increasing 4 and 15 percent, respectively, since 1975.

Table 3. Average annual percentage increase in estimated recreation visits and visitor days for the Maroon Bells-Snowmass Wilderness between 1965-75 and 1975-77.[A]

Time Period	Average Annual Increase in Visits	Average Annual Increase in Visitor Days
1965 - 1975 (10-year period)	10%	49%
1975 - 1977 (2-year period)	4%	15%

[A]Estimate calculated from RIM data.

RPA

The 1980 draft of the RPA Assessment of the Forest and Range Land Situation in the United States indicates that the rate of wilderness visitation will continue to increase but the rate of growth will decrease. Table 4 shows the annual increases in wilderness visitation.

Table 4. Profile of wilderness visitation increases.

Time Period	Average Annual Increase in Visits[A]
Prior to 1960	15%
1960 - 1978	7%
1978 -	2% (projected)

[A]Table based upon figures on pages 141-142 of 1980 draft RPA Assessment.

The RPA Assessment acknowledged that "if no acreage is added to the National Wilderness Preservation System, its recreational use is expected to grow approximately 2 percent each year for the next several decades. Larger increases are expected, however, if significant acreage is added . . ."[2] (pg. 142). With respect to the MBSW, RARE II lands recommended for wilderness will significantly increase MBSW from approximately 71,000 to 185,000 acres.

Population Growth

Table 5 indicates the population increases for four regions of the United States. The percentage increases for each region were weighted by the proportion of 1978 MBSW visitors who originated from that region. A +1.74 average annual population increase was determine.

Potential Impacts

Based upon a study entitled "The potential impact of gasoline futures on 1979 travel strategies" (Journal of Travel Research, Summer, 1979), the following implications are suggested.

In the short run:

a) the rapid escalation of gasoline prices will dramatically curtail travel on trips greater than 500 miles in length.
b) rationing in conjunction with increased gasoline prices will intensify the severity of travel reductions.

[2]The projected 2 percent increase in the Draft RPA document is likely to be adjusted to 6 percent in the final RPA Assessment.

Table 5. Population increases for regions of the United States and the State of Colorado where MBSW visitors originated (permanent residence).

Region of U.S.	Percent of 1978 MBSW Visitors from Region of U.S. and State of Colorado (weights)	Population Increase[A] 1970-77
East of Mississippi	22.3	+ 4.6
Western U.S.	7.2	+ 6.4
Central U.S.	21.0	+ 5.4
State of Colorado	49.6	+18.1
Weighted Population Increase 1970-1977		+11.60
Average Annual Population Increase		+ 1.66

[A]Source: Statistical Abstract of the United States, 1978, U.S. Department of Commerce, Bureau of the Census.

c) restricting or eliminating the availability of gasoline on weekends will also increase the intensity of travel cutbacks.

In the long run, people will probably:

a) become more accustomed to higher gasoline prices, assume that fuel is available and continue to travel by automobile on a more strategically planned basis.
b) travel less frequently.
c) travel to destinations either closer to home or closer to mass transit centers.
d) stay longer at a single destination rather than frequenting several destinations on one trip.
e) abandon the auto as the primary mode of vacation travel for trips over 500 miles in length, in favor of mass transit, or a combination of mass transit and auto. This will be particularly evident when rationing and weekend availability restrictions are applied.

With respect to the MBSW, these short- and long-run gasoline factors will more likely influence "who" visits the MBSW than the total number of visitors. Considering the proximity of the MBSW to population centers, and the destination-oriented visitor who has been visiting the area, it is assumed that gasoline pricing and availability will not influence the number of visitors to the MBSW for the 1980-85 planning period.

Demand Analysis

Table 6 is a summary of the projected demand.

Table 6. Summary of projections.

Source	Average Annual Percentage Increase during 1980-85
RIM (Number of MBSW visitors)	+4.0%
RPA (Number of wilderness visitors)	+6.0%[A]
Population Growth	+1.66%

[A]See Footnote #2 for the 6 percent justification.

Based upon this data and the beliefs that (1) gasoline pricing and availability will more influence "who" visits the MBSW than the total number of visitors and (2) that additional RARE II lands will be added to the MBSW, it is assumed that recreation visitation demand for the MBSW will increase at +4.0 percent per year during 1980-85. It should be noted that while the number of visitors will increase at +4.0 percent annually, the accruing number of visitor days will likely increase between 10-15 percent annually because of visitors visiting fewer areas and staying for longer periods. Table 7 indicates the projected increases in visitors and visitor days per year to the MBSW and adacent RARE II lands recommended for inclusion into the MBSW for the 1980-85 planning period.

Table 7. Projected increases in MBSW visitors (4 percent) and visitor days (12 percent) per year to the MBSW and adjacent recommended RARE II lands during 1980-85.[a]

Year	Visitors	Visitor Days
1979 (current situation)	70,000	140,000
1980	72,800	156,800
1981	75,712	175,616
1982	78,740	196,690
1983	81,890	220,292
1984	85,165	246,728
1985	88,572	276,335

[a]This table includes the estimated number of visitors and visitors occurring on the RARE II lands recommended for inclusion into the Maroon Bells-Snowmass Wilderness.

APPENDIX G

WILDERNESS RANGERS' REPORTING

APPENDIX G

WILDERNESS RANGERS' REPORTING

Wilderness rangers, student interns, and volunteers are asked to collect, maintain, and summarize information obtained concerning current wilderness situation during their employment. The reporting process involves three mechanisms: (1) field observation/conversation diary, (2) written summary report, and (3) a debriefing "rap" session.

Field Observation/Conversation Diary

Each spring the wilderness coordinator will develop a structured information recording form (with instructions) to be utilized by field personnel. Field personnel are instructed to record information on the diary forms throughout their employment and to maintain a file folder at their District Office. The diary form should provide space to record information concerning:

1. Date, time, management unit, specific location, and employee initials
2. Issues/concerns identified by wilderness coordinator in the annual monitoring plan
3. Description of users (where, when, how many, types of activities)
4. Evidence of resource impacts
5. Public involvement via conversation: complaints, suggestions, opinions, perceptions
6. Violation of rules and regulations
7. Completion of assigned tasks (what, where, when, how long)

See example observation/conversation diary form (Figure 1) used by CSU/RMS. The diary form was printed on a 5" x 7" pad, which contained 100 forms and cost approximately $2.00 per pad.

Written Summary Report

The written summary report is prepared prior to employee departure and requires 1-3 days of office time. The purposes of report are to (1) objectively summarize information collected by the observation/conversation diary and (2) to record subjective opinions, recommendations, and perceptions based upon field experience. The report should provide specific information concerning the management units worked in.

Debriefing "Rap" Session

Prior to departure of seasonal employees, a meeting is held involving seasonal employees, wilderness coordinator, and possibly other DR and SO staff. The meeting provides opportunity to verbally exchange and compare diary information, recommendations for management actions, recommendations for improving the utilization of seasonal employees, and perceptions of wilderness resource and its users.

OBSERVATION DIARY

INITIALS:_____ DATE:_____ TIME:_____

ZONE:_____ SPECIFIC LOCATION:_____

_____

OF PEOPLE BY AGE GROUP:

-15	16-25	26-35	36-50	50+	TOTAL

MODE OF TRAVEL (CIRCLE): HIKE HORSE HIKE WITH PACK ANIMAL

MOTORCYCLE 4-WHEEL VEHICLE NON-4-WHEEL VEHICLE

OTHER_____

IS PARTY -- (CIRCLE ONE): IN TRANSIT AT DESTINATION SITE

(CIRCLE ONE): ON ROAD/TRAIL OFF ROAD/TRAIL

ACTIVITIES PARTICIPATING IN:_____

_____

_____

VIOLATIONS OF RULES AND REGULATIONS SPECIFIC TO AREA?

OTHER OBSERVATIONS?

Figure 1 (Front-side)

APPENDIX H

FISH STOCKING PROGRAM

APPENDIX H

FISH STOCKING PROGRAM

The Colorado Division of Wildlife (CDOW) varies its fish stocking activities in the MBSW from year to year depending on the specie populations in various lakes and the availability of fish for stocking. The following lakes and streams are stocked on a need and availability basis in the MBSW:

Capitol Lake - native cutthroat trout
Capitol Creek - rainbow trout
American Lake - rainbow trout
Avalanche Lake - native cutthroat trout
Copper Lake - native cutthroat trout
Copper Creek - native cutthroat trout
Hardscrabble Lake - native cutthroat trout
Moon Lake - native cutthroat trout
Pierre Lakes - native cutthroat trout
Siberia Lake - native cutthroat trout
Thomas Lake - native cutthroat trout
Willow Lake - native cutthroat trout

APPENDIX I

CODE-A-SITE AND REGISTRATION/PERMIT INSTRUCTIONS

APPENDIX I

CODE-A-SITE AND REGISTRATION/ PERMIT CODING INSTRUCTIONS

CODE-A-SITE

Campsite inventory and monitoring activities are based on a combination and adaptation of (1) Code-A-Site: A system for inventory of Dispersed Recreation Sites in Roaded Areas, Backcountry, and Wilderness (Hendee et. al., 1976; USDA-Forest Service PNW-209) and (2) campsite condition rating classes (Frissell, 1978; Journal of Forestry). See example of campsite inventory/ monitoring tools.

REGISTRATION/PERMIT CODING INSTRUCTIONS

Columns*

1-5	zip code*
6-9	0330 MBSW or 1210 Hunter-Fryingpan
10-13	month/day arrival (0715)
14-17	month/day return (0718)
18-20	location of entry: (see trailhead code)
21-23	location of exit: (see trailhead code)
24-25	method of travel: foot-01; horse-02; ski-07; snowshoe-08
26-27	# people (right justify actual number indicated)
28-29	# of horses, etc. (right justify actual number indicated)
30-31	leave blank
32-34	camp area codes (see camp codes) 35-#nights
36-38	camp area codes (see camp codes) 39-#nights
etc.	camp area codes (see camp codes) "- #nights

TRAILHEAD AND CAMPING AREA CODES

110 Capitol-Williams Trailhead	
Hardscrabble	111
Williams	112
Below Capitol	113-115
Capitol Lake	116

120 Snowmass Trailhead	
Haystack area	121
Moon Lake area	122
Below Beaver Ponds	123
Beaver Ponds	124
Below Pierre Lakes	125

120 Snowmass Trailhead - Cont.	
Pierre Lakes	126
Snowmass Lake	127
Buckskin-Snowmass Trail	128
Lost Remuda Basin	129

130 East Snowmass Trailhead	
Lower East Snowmass	131
Upper East Snowmass	132
Willow Lake	133
Below Willow Lake	134

*If data is missing for any of the columns (1-68) those spaces will be left blank, do not fill in with zeros.

140 Crater Lake-West Maroon Trailhead

Crater Lake	141
Minnehaha	142
Lower West Maroon	143
Upper West Maroon	144

150 East Maroon Trailhead

Beaver Ponds	151
Mid East Maroon	152
Upper East Maroon	153

160 Conundrum Trailhead

Lower Conundrum	161
Mid Conundrum	162
Hot Springs	163

170 American Lake Trailhead

Below Lake	171
Cathedral Lake	172
Upper Castle Creek	173

180 Cathedral Lake Trailhead

Below Lake	181
Cathedral Lake	182
Upper Castle Creek	183

310 Thomas Lakes Trailhead

Thomas Lakes	311
West Sopris Creek	312
Mount Sopris	313

320 Avalanche Trailhead

Lower Avalanche and Bulldog Creek	321
Mid Avalanche Creek	322
Upper Avalanche Creek	323
Avalanche Lake	324
East Fork-West Fork Avalanche Creek	325

330 Redstone Trailhead

Redstone Management Unit	331

340 Marble Trailhead

Carbonate Creek	341

350 Silver Creek Trailhead

Arkansas-Meadow Mountain Area	351

360 Geneva Trailhead

Geneva Lake	361
Upper Geneva Management Unit	362

370 Lead King Trailhead

Trailrider Pass Area	371
Lower Fravert Basin	372
Hasely Basin	373
Upper Fravert Basin	374
East Fork	375

910 Rustler Gulch Trailhead

Rustler Gulch	911

920 Copper Creek Trail

Lower Copper	921
Copper Lakes	922

930 West Brush Creek Trailhead

West Brush Creek	931

940 Twin Lakes Trailhead

Twin Lakes-Cumberland Basin Area	941

X	FOREST CODE (TENS 2 1 / UNITS 0 7 4 2 1)	DISTRICT CODE (TENS 2 1 / UNITS 0 7 4 2 1)	MGMT. UNIT (TENS 2 1 / UNITS 0 7 4 2 1)	SITE NUMBER (HUNDREDS 0'S 7 4 2 1 / TENS 7 4 2 1 / UNITS 7 4 2 1)

REGION _____ FOREST _____ DISTRICT _____

TOWNSHIP _____ RANGE _____ SECTION _____ DOT [ ] MGMT UNIT _____ SITE NO. _____

DATE CODED _____ CODED BY _____

GENERAL DESCRIPTION OF SITE	
MANAGEMENT NOTES	
FUTURE MANAGEMENT RECOMMENDATIONS AND SITE COSTS	

KEY #	USE THIS AREA WHEN SPECIFICS ARE REC
(23)	ON SITE VEGETATION
(23)	OFF SITE VEGETATION

Table 1. Campsite condition classes and possible management actions.

Condition class	Visible indicators	Management
1	Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.	These sites are barely recognizable as camping areas. If not in situations known to be sensitive to use (e.g., wet or slump areas), no management action is necessary. Maintain current use level or allow increase if nearby sites must be closed.
2	Ground vegetation worn away around fireplace or center of activity.	Site change now apparent but still within acceptable limits. These areas are readily identified as campsites and will continue to attract use. Future use should be carefully monitored to detect adverse change.
3	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	This is a transitional condition. Considerable change in plant cover is evident but little sign of soil problems. The condition may be accepted as normal in areas of high attraction. However, modification of current use patterns and intensities may be needed to prevent further change.
4	Bare mineral soil widespread. Tree roots exposed on the surface.	Deterioration is accelerating. If current level and type of use continues, soil erosion, loss of tree cover, and esthetic degradation are likely. Withdraw use from these sites and allow recovery. Some artificial rehabilitation may be desirable to speed recovery. If site is improperly located, permanent closure should be considered. If site is reopened, insure that use patterns are adjusted to prevent reinjury.
5	Soil erosion obvious. Trees reduced in vigor or dead.	Natural recovery will be extremely slow. The sites should be closed permanently and alternate ones located. If the site is critical to the recreation pattern, extensive rehabilitation will be required to return it to acceptable condition.

CHECK (X) APPROPRIATE CATEGORIES

PLEASE READ CODE BOOK PRIOR TO USING THIS CARD!

CODE - A - SITE
(DISPERSED RECREATION SITE INVENTORY)
U S D A FOREST SERVICE
PACIFIC NORTHWEST FOREST & RANGE EXPERIMENT STATION

5-75 MCBEE ® SYSTEMS SEATTLE, WA

Campsite Condition Rating Class

EXTRA CODING FOR LOCAL USE (28)

1 2 3 4 5

I DESCRIPTIVE ACCESS

TYPE OF AREA (1)
- DISPERSED
- BACK COUNTRY
- WILDERNESS
- OTHER (SPECIFY →)

(2)
- YEAR ROUND
- SEASONAL (SPECIFY →)

ROADS (SPECIFY NAME OR NO. IF ANY →) (3)
- MAIN ROAD
- SPUR ROAD
- INFORMAL ROAD
- 4 WHEEL DRIVE ROAD
- OTHER (SPECIFY →)

TRAILS (SPECIFY NAME OR NO. IF ANY →) (4)
- MAIN TRAIL
- SPUR TRAIL
- PATH
- CROSS COUNTRY
- OTHER (SPECIFY →)

DISTANCE FROM TRAIL OR ROAD (5)
- 0 - 50'
- 51 - 100'
- 101 - 200'
- OVER 200'

_____ FT

TYPE OF SITE (CHECK ONE FOR ROADED AREA) (6)
- TURNOUT
- TRAIL HEAD
- ADJACENT ROAD
- OTHER (SPECIFY →)

TENTS (7)
- TENT SUITABILITY ← YES ☐ NO
- WHY? →
- NO. OF TENT SPACES: 1 2 3 4+ _____

VEHICLES (8)
- VEHICLE SUITABILITY ← YES ☐ NO
- WHY? →
- NO. OF VEHICLE SPACES: 1 2 3 4+ _____

SITE ORIGIN & CURRENT STATUS (9)
- OFFICIAL
- IMPROMPTU
- UNIMPROVED
- MINOR IMPROVEMENTS (SPECIFY →)
- MAJOR IMPROVEMENTS (SPECIFY →)

OTHER SITES (10)

NO. IN VIEW
- 0
- 1 - 3
- 4 - 5
- 6 +

_____

NO. IN ½ MILE
- 0
- 1 - 3
- 4 - 5
- 6 +

_____

KEY *

USE THIS AREA WHEN SPECIFICS ARE REQUIRED OR TO RECORD ADDITIONAL DATA

ADDITIONAL NOTES ON REVERSE ☐

VII SCHEMATIC DRAWING

USE BOX TO MAKE A ROUGH SKETCH OF SITE

INDICATE POSSIBLE TENT (X) AND VEHICLE (O) SPACES

INDICATE NORTH

VI ECOLOGICAL

FREQUENCY OF USE (27)
- CONSTANT
- FREQUENT
- MODERATE
- SLIGHT
- INFREQUENT

ELEVATION (25) FEET
- UNDER 1000
- 1001-2000
- 2001-3000
- 3001-4000
- 4001-5000
- 5001-6000
- 6001-7000
- 7001-8000
- 8001-9000
- 9001-10,000
- 10,001 +

EXPOSURE (26)
- NE
- NORTH
- NW
- EAST
- SE
- SOUTH
- SW
- WEST

CROWN COVER (24)
- NONE
- 26-50%
- 1-25%
- 76-100%
- 51-75%

(23) VEGETATION SPECIFY ON BACK
- NO GROUND COVER

GROUND COVER (22)
- 26-50%
- 1-25%
- 76-100%
- 51-75%

IMPACT OF PREVIOUS USE (21)
- EXTREME
- HEAVY
- MODERATE
- LIGHT

V

(20) SPECIAL PROBLEMS FOR USER (← SPECIFY) NO ☐ YES →

IV FACILITIES

(19)
- NO FACILITIES
- GARBAGE CANS
- INFORMATIONAL SIGNS
- TABLES
- FIREPLACE

TOILETS (18) (SPECIFY LOCATION) ←
- NONE
- PIT
- PIT STRUCTURE
- SEALED VAULT

II SITE RESOURCES

(11) WATER (SPECIFY LOCATION)
- ON SITE ← YES ☐ NO
- OFF SITE ← YES ☐ NO
- STREAM
- SPRING
- LAKE

FIREWOOD (12) (SPECIFY LOCATION)
- AVAIL: ALL YEAR; SEASONAL (SPECIFY →)
- SOURCE: ON SITE ← YES ☐ NO; OFF SITE ← YES ☐ NO
- AMOUNT: NATURAL; SLASH; OTHER

FORAGE (14) (SPECIFY TYPE & LOCATION)
- FIRE HAZARD: ON SITE ← YES ☐ NO; OFF SITE ← YES ☐ NO
- AMOUNT: ABUNDANT; AVAILABLE; SCARCE; NONE

OTHER RESOURCES (15) (SPECIFY IN COMMENTS SECTION)
- NO. BENCHES: 1 2 3 4 5
- ABUNDANT; AVAILABLE; SCARCE; NONE

III AREA ATTRACTIONS & OPPORTUNITIES (16)
- FIREWOOD CUTTING
- FISHING
- BERRY PICKING
- HUNTING
- MUSHROOM COLLECTING
- SCENERY
- BRUSH PICKING
- ROCK COLLECTING
- HORSE LOADING RAMP
- BOAT RAMP
- OTHER

OTHER FACILITIES ← (SPECIFY) (17)
- 1
- 2
- 3

APPENDIX J

FIRE MANAGEMENT PLAN

FIRE MANAGEMENT CHAPTER

I. INTRODUCTION

A. Preface

This plan is part of the overall Maroon Bells-Snowmass Wilderness Management Plan. The Fire Management Area (FMA) which it covers includes the existing wilderness area and proposed additions nominated by the Forest Service under the RARE II process. The plan will be implemented in the RARE II additions only when and if they are designated as Wilderness by Congress.

The goal is to allow fire to play as unrestricted a role as possible in the perpetuation of natural ecosystems, consistent with the protection of certain values within and adjacent to the Wilderness.

The Area can be characterized as having a low fire potential, due primarily to the interruption of fuels and to the cool, moist weather conditions. Most of the area lies above the 10,000 foot level, where the fire season is short. It is dissected by partially to non-vegetated mountain and ridgetops, some exceeding 14,000 feet in elevation. These formidable barriers will normally confine fires to single drainages. Long-range spotting from one drainage to another is unlikely even under the most severe burning conditions.

Existing fire records show that fires have been few and characteristically small for the past 50 to 60 years. Fuel inventories indicate generally light to moderate dead fuel loadings in the predominant timber types at this time. If present suppression policies are continued, fuels will build up over time as stands mature and begin to fall apart.

B. Area Description

The Fire Management Area contains approximately 185,000 acres of National Forest lands surrounding the northern section of the Elk Mountain Range in west-central Colorado. Of this total, 66,380 acres comprise the existing Maroon Bells-Snowmass Wilderness area and the remaining lands are proposed additions under RARE II. It includes tributaries of the Roaring Fork and Crystal Rivers, and ranges in elevation from 7400 feet where the boundary crosses Avalanche Creek to 14,265 feet on the summit of Castle Peak. The majority of the FMA lies in Pitkin County, the southern tip being located in Gunnison County. It includes portions of the Aspen and Sopris Ranger Districts on the White River National Forest and the Taylor River Ranger District on the Gunnison National Forest. Primary access to the area is Colorado State

Highway 82 - from Interstate 70 at Glenwood Springs to the north and over Independence Pass from the east. A more detailed description of this area can be found in the Wilderness Management Plan.

C. Fire Management Objectives

The objectives for the use and suppression of fire in the Maroon Bells-Snowmass Wilderness Area are to:

1. Allow fire to play as near natural a role as possible while providing for the protection of resource values outside the wilderness and public safety both within and outside the wilderness;

2. Suppress wildfires with a minimum of adverse impact on the wilderness resource.

D. Legal and Policy Direction

Legal and policy direction for guiding the use and suppression of fire in wilderness comes from the Wilderness Act and from the Chief's direction found in the Forest Service Manual. Following are some appropriate sections from each of these documents:

The Wilderness Preservation Act of 1964 (Section 2C) defines wilderness as "an area where earth and its community of life are untrammeled by man..., an area of undeveloped Federal land retaining its primeval character and influence, protected and managed so as to preserve its natural condition..."

In the concept of the Wilderness Act, "untrammeled by man" means an area where man's influence does not impede the free play of natural forces or interfere with natural succession in the ecosystem (FSM 2320).

In the wilderness section of the Forest Service Manual, maintaining plants and animals indigenous to the area is listed as one of the primary objectives in implementing the Wilderness Act (2320.2). It further states that both climax and successional biotic communities will be recognized as desirable, and that ecological processes will be permitted to operate naturally (FSM 2320.3). Fire is a natural, ecological process, just as are insects, tornados, snow and volcanos. It has a major influence on the diversity of life forms, age classes, and species of both plant and animal communities in a wilderness system.

The overall objective for fire management is to provide a fire protection and use program which is responsive to land and resource management goals and objectives.

Regional Foresters shall provide for prescribed fires using either planned or unplanned ignitions to protect, maintain, or enhance production of National Forest resources (FSM 5102).

Regional Foresters are delegated authority to establish and approve fire management areas and fire management objectives and to authorize the use of unplanned ignitions to meet these objectives (FSM 5104.2).

E. Basic Assumptions

1. Fire is a natural part of the ecosystem's dynamics and is necessary to perpetuate and maintain these ecosystems in a natural state.

2. The natural fire regime for the vegetative types in this wilderness is one of high intensity fires at infrequent intervals (200-300 years).

3. Total exclusion of fire is not natural and, if successful, will eventually result in unnatural conditions.

4. No attempt should be made at this time to prescribe fires to maintain ecosystems in any particular successional or climax stage. All natural fires will be recognized as natural processes, and the resulting changes in plant and animal communities will be acceptable within the constraints discussed below.

F. Constraints

1. Public safety and property must be protected both inside and outside the FMA.

2. Water quality in municipal watersheds must be protected.

3. Air quality both in and outside the FMA must be protected.

4. All fire management actions should be cost-effective.

5. Qualified personnel will make all fire management decisions.

6. The public will be informed of fire management activities.

II. THE FIRE ENVIRONMENT

A. Fuels and Vegetative Types

The Fire Management Area is dominated by three major vegetative types--alpine tundra, spruce-fir, and aspen. The approximate

percentages of these types are 30%, 25%, and 25% respectively. The remaining approximately 20% of the area consists of lodgepole pine, Douglas fir, krummholz, mountain grassland, various nonvegetated categories (talus slopes, rockland/cliff), and small acreages of pinon-juniper and various brush species.

Of the major vegetation types present, spruce-fir and other conifers have the highest fire potential. For this reason, the fuel model used in this plan is based on these species. Fuel model H is described as short needled conifers in healthy stands with sparse undergrowth and a thin layer of ground fuels. This description fits most of the spruce-fir stands in the area. In the absence of fire, fuel loadings will increase over time and the fuel model will eventually have to be changed from H to G. This will not occur for several decades excepting perturbances such as insects or tornados.

1. Spruce-fir.

   There are approximately 46,000 acres of the spruce-fir type in the wilderness and the proposed additions. Spruce-fir is the climax vegetation. Aspen and lodgepole pine are seral stages to it. If fire could be totally excluded from the area, most of the forest types would eventually succeed to a spruce-fir type. We don't know what will happen to the spruce-fir climax through a long term (200 years) exclusion of fire since fire exclusion is a relatively new practice. Our experience with fire exclusion is limited to about 60 years, which is a short time in the life of a system that may span 500 years or more.

   A fire history study was not conducted for this plan. However, the predominant fire regime in the spruce-fir type is one of long-return-interval (100-300 years) crown fires or severe surface fires that destroy the stand and set vegetative development back to a pioneer shrub stage. Fire has been a major factor in maintaining meadow and grassland communities in the river valleys in this type.

   The spruce-fir stands in the area are characteristically well stocked, uneven aged primarily in the pole to small sawtimber age classes. Old, overmature stands are scattered in small patches and are not a dominant fuel type at this time. Downed fuel loadings range between 15 and 30 tons per acre over most of the type. Loadings in the overmature patches range up to 70 tons per acre.

   Spruce-fir stands are found throughout the FMA. They seldom exceed 500 acres and are separated by aspen stands, riparian vegetation, alpine areas, rocks or other categories generally exhibiting low potential for fire spread

and intensity. Two notable exceptions to this generalization are large coniferous stands in the Hardscrabble area southeast of Mt. Sopris and on the northern end of the ridge separating Conundrum and Castle Creeks. These areas were included in a protection zone partially because of the threat they pose for fire spreading outside the FMA.

2. Other Conifers.

Lodgepole pine and Douglas fir comprise less than five percent or about 9,000 acres of the entire Area. Lodgepole is usually found at elevations below 10,500 feet, commonly in mixed stands with spruce-fir or Douglas fir. It is a shade intolerant, fire dependent type that is normally a seral stage to a spruce-fir climax. As fire is allowed to play a more natural role in the wilderness, we can expect an increase in the number of acres in this type. Douglas fir occurs mainly on northern exposures. Downed woody fuel inventory of a mixed Douglas fir-lodgepole pine stand showed the fuel loading to be between 10 and 20 tons per acre.

3. Aspen.

There are about 46,000 acres of aspen in the area now. Aspen is also an intermediate stage to a spruce-fir climax. Fire is a natural disturbance mechanism that is needed to perpetuate the stand. It is a pioneer species regenerating mainly from root suckers which are a direct response to fire. Like lodgepole pine, the amount of aspen in the FMA can be expected to increase with the implementation of this plan's natural fire use.

Aspen stands are not conducive to the spread of fire under normal conditions. Their lush understories of shrubs, forbes, and grasses usually stay green and hold abundant soil moisture well into the fall season. Lacking a fuel ladder, these stands are not prone to crown fires. Inventory of a representative stand showed downed woody fuels to range from one to four tons per acre. For these reasons, aspen stands will provide natural barriers to fire except under extremely dry conditions, in which case only surface or ground fires can be expected.

4. Alpine Vegetation.

This category consists of open forbs and grass cover with scattered small trees and krummholz at high elevations in the FMA. Similar to aspen, this vegetation type is resistant to the spread of fire except when cured. When dry,

cured conditions exist, slow spreading low intensity fires can occur in alpine areas. These conditions can occur in the fall when fire has little, if any, effect on vegetation type or composition. In general, this type breaks up other fire supporting fuel types.

B. Climate and Fire Weather

The Fire Management Area is dominated by cool, moist conditions. Remnants of the area's heavy winter snowpack usually persist until mid-July at higher elevations, some lasting year round. Frequent afternoon thunderstorms are common during summer months with precipitation averaging around 25 inches annually in Pitkin County. Temperatures range between lows in the 30's (^{o}F) and highs in the 80's (^{o}F). Prevailing winds are generally westerly.

The fire season for the White River National Forest is June 11 through September 10, as determined in the 1972 fire replanning process. This is the period during which 90% of fires occur Forestwide, regardless of size. However, large man-caused fires are not uncommon at the higher elevations during the late, dry fall months. Lightning activity is low this time of year.

Fire weather predictions for the area are currently based on data from the Gypsum weather station, some 30 miles north and at an elevation of 7700 feet. Although not representative of the higher elevation fuel types and weather, it has been adequate for fire protection purposes because of the low fire risk in these areas. It will not serve the needs of a prescribed fire management program for the Maroon Bells-Snowmass Wilderness. For this purpose. a new permanent station should be established at or near the Ranger Station in the town of Aspen.

The following chart summarizes some fire behavior indicators for several Fire Weather Stations around the Area.

NFDRS Component Analysis - Maroon Bells-Snowmass FMA

Station		Pitkin	Mesa Lakes	Rio Blanco	Gypsum
Elevation		9220 ft.	9800 ft.	8800 ft.	7700 ft.
Fuel Model		H	H	G	G
Season		6/1-9/20	6/1-9/20	6/1-9/20	6/1-9/20
Burning Index	0-28	107	110	21	39
	29-38	2	0	33	28
	39 +	1	0	36	23
Energy Release Component	0-20	80	98	13	29
	20-30	29	12	33	37
	30-40	1	0	35	24
	40 +	0	0	9	0
1,000 Hour Fuels*	18 +	81	56	57	66
	12-18	29	54	33	24
	0-12	0	0	0	0

* 1,000 Hour Fuels - percent moisture content of downed woody fuels 3 inch dia. or larger.

The chart illustrates a dramatic difference in fire potential that can be expected between the G and H model fuels.

C. The Role of Fire - Past, Present, and Future

Fire records dating back to 1930 for areas on the White River National Forest and 1950 on the Gunnison National Forest were used to prepare the fire occurrence map (Figure J-1, p. 15). This map illustrates man-caused fires inside the FMA and lightning fires both inside and within a five mile radius of the boundary.

The available records show an average of 0.25 lightning fires 1/million acres) and 0.75 man-caused fires annually (4/million acres). Lightning ignitions are probably more common than this but most are extinguished by the rains that accompany the thunderstorms. Dry lightning is a rare occurrence in the FMA. Fires occurring during the period of available records have been characteristically small, the largest being a 67-acre lightning fire in 1939. Aspen mosaics and sites of old burns indicate that fires of up to several hundred acres have occurred prior to 1900.

Natural fire activity in the area was probably more often the result of lightning fires that occurred in the pine and oak fuel types at lower elevations and eventually burned their way up into the higher elevation types. The one lightning fire that occurs every four years in or near the FMA probably will not produce the burned acres necessary to maintain natural ecosystems. With about 100,000 acres of fire dependent types in the area, and using the longest interval (300 years), about 3,000 acres should burn over every 10 years. This is unlikely, particularly with the restrictions that will have to be placed on the few ignitions that do occur.

Fuel inventories taken in the FMA show that suppression policies in effect since 1910 have not yet resulted in an excessive build-up of fuels. Continued suppression of all fires would lead to increasingly heavy fuel accumulations in the future. Natural fires prescribed by this plan should decrease this tendency as well as maintain the current variety of successional and climax vegetation types found in the FMA.

D. Other Considerations

1. Air Quality.

Smoke problems from fires will be minimal in the immediate area due to the high elevations and the unstable weather characteristics that prevail during the fire season. Weather conditions when the majority of natural fires are likely to be burning (July, August, and September) are generally favorable to good smoke dispersion. Smoke problems can occur around Aspen, a resort community at the southern end of the Roaring Fork Valley, particularly in the fall. This area lies downwind of the FMA. During periods of extensive high pressure systems or when inversions occur, smoke funneled down from the Castle, Maroon, Snowmass, or Capitol Creek Valleys could be trapped at the end of the Roaring Fork Valley blanketing the Aspen area. Such situations will be monitored and avoided if possible.

Although Denver and the front range of Colorado are some 100 miles from the area, they are down wind. Large (1000+ acres) fires could affect the air quality in this non-attainment area. This, too, will be monitored and, if necessary, appropriate action will be taken to mitigate the adverse effects.

Colorado State Department of Health permit requirements will be met for all declared prescribed fires. Whenever these fires are burning, smoke dispersal forecasts will be checked daily and entered on the monitoring forms. Prescriptions will be met with "fair" or better smoke dispersion forecasts.

2. Rare and Endangered Species.

There are no known threatened or endangered animals species in the FMA. Two plant species, however, have been identified - Senecio poteri, a high alpine sunflower, is on the proposed Federal endangered list, and Sullivantia purpusii, a member of the saxifrage family, is on the proposed Federal list of threatened species. Both have been observed around and above the 12,000 foot level in the Triangle Pass-Copper Pass area. No special precautions are necessary to protect them as they are in the alpine type where the threat of fire is low.

3. Soil and Water.

Significant portions of four municipal watersheds are located within the FMA boundary. These provide water to the communities of Redstone, Aspen, Snowmass Village, and Marble. Water quality will be protected by suppressing fires in critical areas of these watersheds.

The Snowmass Village watershed is in the least restrictive of the Fire Management zones. It covers a large area in three separate drainages. Two of these, Snowmass and East Snowmass Creeks, lie within the FMA while the third, Brush Creek, is completely outside. A majority of the vegetation inside the FMA consists of aspen, mountain grasses, and alpine areas, all with a low fire intensity potential.

The only major threat to soil values outside of the FMA is found where Capitol Creek flows adjacent to and just outside of the northern boundary. This is an area of unstable slopes susceptible to landslide activity. The boundary runs approximately mid-slope south of the creek. Loss of vegetative cover resulting from a natural fire inside the FMA could trigger landslides and remove topsoil in areas outside of the boundary. For this reason, this area is in the suppression zone.

III. ACTION PLAN

A. The Fire Management Area

The fire management area includes all of the existing Maroon Bells-Snowmass Wilderness area. It will also include any RARE II additions that may be added by Congress (see Figure J-1, p. 8).

B. Fire Management Zones

The FMA is divided into two fire management zones-- a suppression zone and a prescribed fire zone. Zone boundaries are drawn along geographic features (ridge lines, stream beds, etc.) to make their identification as simple as possible for air and ground observers.

1. Suppression Zones.

   This zone includes lands where fire damages may be unacceptable and a buffer next to areas requiring protection from fire. It includes municipal watersheds, a buffer around the Wilderness boundary, and a buffer around private and state owned lands within the Wilderness. These areas are identified on the area map and on zone overlays for the 7.5 minute series topographic maps in the working plan.

   All fires in these zones will be treated as wildfires and suppressed. Additional guidelines and restrictions for fire suppression can be found later in Section III,F of this plan.

2. Prescribed Fire Zone.

   This zone includes all areas not included in the suppression zone. Prescribed fires in this zone will be allowed to burn with little restriction.

   They will be under prescription when all of the following conditions are met.

   a. Public safety and domestic livestock are not threatened.

   b. The fire does not threaten another zone or the exterior boundary of the FMA. If it does, that portion of the fire will be contained to bring it back into prescription.

   c. The prolonged smoke dispersal forecast is "fair" or better.

   d. There are no more than two fires in excess of 10 acres already burning in the FMA.

e. Forest and regional fire suppression forces are available.

f. Programed funds are available to manage the fire.

g. Colorado Department of Health approves management fire.

h. Fire was ignited by lightning.

C. Authorities and Qualifications

The following authorities and qualifications currently apply and will be used to implement the Maroon Bells-Snowmass Wilderness Fire Management Area Plan.

The Forest Supervisor or his/designated acting will be the authority for all decisions made in implementing this plan. In situations where fires involve both Forests, the two Supervisors will coordinate fire management decision. The authority will have at least a Class III Fire Boss rating or he will utilize an advisor with these qualifications.

For large, complex fires (generally those with a potential to exceed 500 acres) a fully qualified Fire Behavior Officer will be involved in the decision-making process.

D. Declaration of a Prescribed Fire

When a potential prescribed fire is reported in the prescribed fire zone, the initial assessment will usually be made from aerial observations. Ground forces may be used when the fire is readily accessible. Determination of cause (man-caused or lightning) can usually be made from the air. If there is any doubt, ground observers will be sent to the fire to determine the cause.

Based on information received from observers, the Forest Supervisor or his acting will determine whether or not it is a lightning fire (see Exhibit 1, p. J-16). If it is declared a prescribed fire, and the prescription is met, the fire will be allowed to burn.

E. Monitoring

Once a fire has been declared a prescribed fire and the decision has been made to let it burn, it will be monitored closely to gather information for future use in modifying this plan and to predict fire behavior.

The decision-making authority (the Forest Supervisor or his acting) will decide the type of monitoring to be used--on-site, aerial or a combination of the two. It should be based on an analysis of the fuels and topography in which the fire is burning and is likely to spread into, current fire weather conditions and forecasts, NFDRS predictions, and the appropriate zone prescriptions. On-site monitoring will be required for active and

potentially active fires. During extensive periods of inactivity, fires may be monitored from aircraft only. In addition, some active fires may only require aerial monitoring--for example, a fire burning in a small isolated conifer stand surrounded by alpine tundra. All fires will require at least one on-site examination before being declared out.

Prescribed fires will be monitored daily until declared out. Monitoring will as a minimum consist of: (1) taking spot weather forecasts on-site or at a representative site at least once a day, and (2) filling out a daily situation report (see Exhibit 2, p. J-17). Monitoring duties will be assigned to personnel with at least Crew Boss qualifications, and a minimum of two people will be required for on-site assignments. All monitored data will be maintained as permanent records for the Fire Management Plan.

F. Suppression Actions

1. Use methods and equipment which least alter the landscape or disturb the land surface.

2. Utilize natural barriers (aspen stands, streams, talus slopes, etc.) as control lines whenever possible.

3. Within the fire management area, appropriate suppression actions will be taken to meet the fire management direction for the area. Suppression actions will be taken to maintain prescribed fires within predetermined boundaries and within other prescribed fire requirements. When a fire is not declared a prescribed fire, the fire is considered a wildfire and appropriate suppression will be taken in accordance with fire management area direction and the following guidelines.

4. Avoid the use of dozers, except in extreme situations where they might be necessary to protect public safety, property, or resources outside the FMA. If used, access routes will be located out of sight from travel and water influence zones as much as possible. The use of dozers must be approved by the Regional Forester for any area within existing wilderness boundaries.

5. Approval by the Forest Supervisor will be required for use of the following:

   a. Small motorized equipment--chain saws, pumps, generators, etc.

   b. Helicopters for transportation, reconnaissance, water and retardant drops.

   c. Fixed wing aircraft for low level reconnaissance.

   d. Air tanker drops.

6. An escaped fire situation analysis will be completed for any wildfire that escapes initial attack or for any prescribed fire that exceeds its prescription.

G. Financial Plans

Wildfires will be suppressed using FFF funds as they would anywhere else. Monitoring and surveillance of prescribed fires will be financed using the following guidelines:

Up to initial attack or declaration of a prescribed fire, actions will be financed from FFF funds. If the fire is declared prescribed and is in prescription, the monitoring and surveillance of it will be funded from Forest Fire Protection or wilderness management funds, preplanned and budgeted for this purpose. If budgeted funds are exhausted or if none was preplanned, FFF funds may be used and the fire must be suppressed. If the fire escapes prescription, project funds may be used to bring it back into prescription. Once FFF funds are used, the fire will be treated as a wildfire and must be suppressed.

H. Public Information

In recent years, prescribed fires burning on Federal lands have caused controversy and left the public confused. In an attempt to overcome this, an aggressive education program will be used to inform the public on the fire program and keep them informed while a fire is in progress. The following actions will be taken to accomplish this:

1. The District in which a prescribed fire occurs will have primary responsibility for providing information to the public. The District Ranger or his acting will issue press releases to various local newspapers, radios and television stations, etc. This effort will be coordinated with the Forest Public Information Officer and adjacent Districts.

2. If present, on-site monitoring personnel will provide information to forest visitors in the area.

3. Both office and field personnel involved in making regular public contacts on the District shall be briefed on the Plan and kept informed on fire activity. This will provide an important source of information for forest visitors and interested parties.

4. The County Sheriff, local State Health Department officials, and other Federal and State land management agencies will be notified and kept informed of fire activity.

5. The Regional Dispatcher will be notified as soon as a prescribed fire is declared and he will be kept informed of progress through the daily situation reports.

I. Review and Revision

This plan will be reviewed at least annually and revised as necessary. The review will be made by District Rangers, District Staffs, the Forest Supervisors and their Staffs. Monitored data from natural fires in the FMA will be an important source of information for making revisions. Reviews may be deemed necessary following significant natural fires.

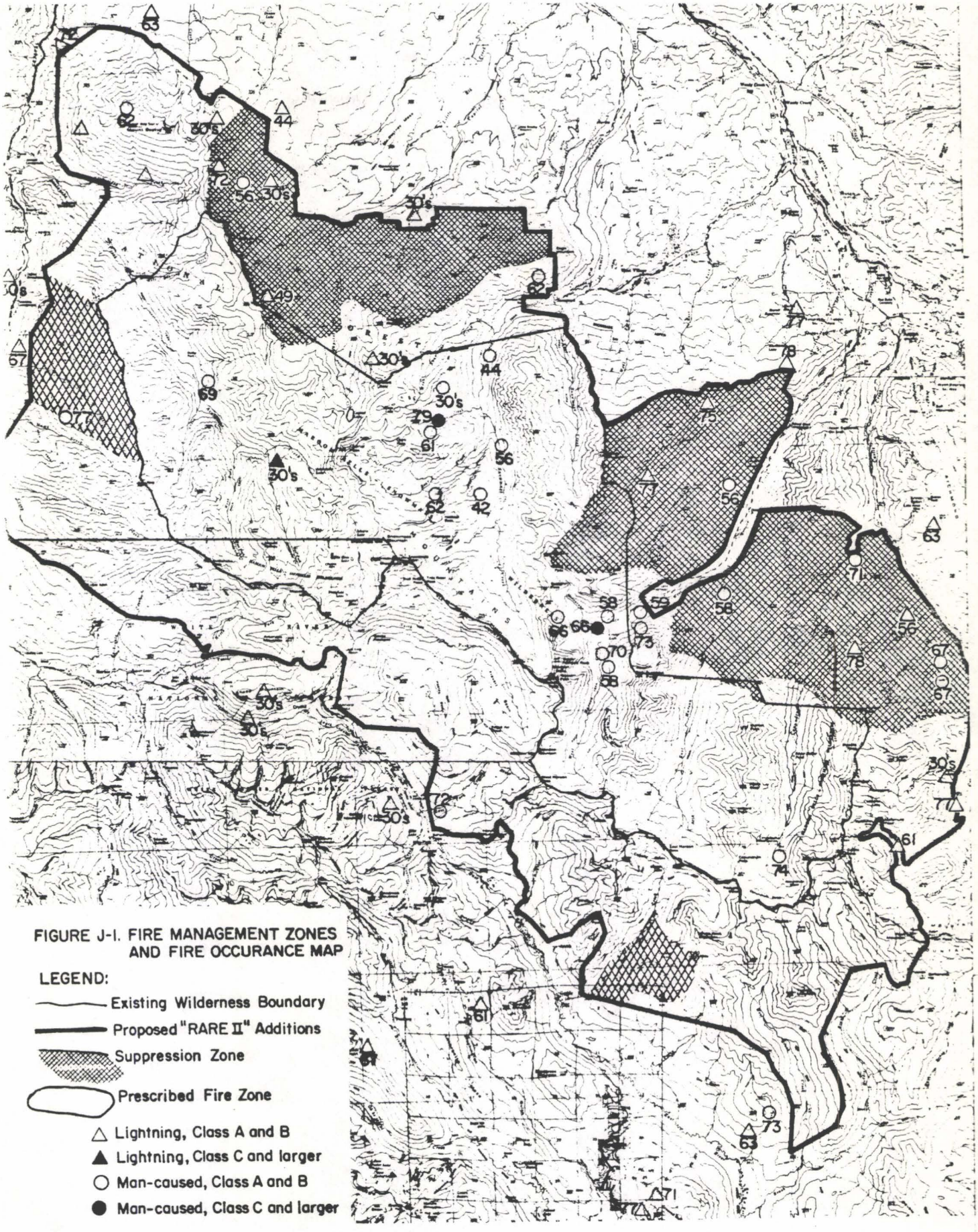


FIGURE J-I. FIRE MANAGEMENT ZONES AND FIRE OCCURANCE MAP

EXHIBIT 1 TO APPENDIX J

DECISION FLOW CHART

MAROON BELLS-SNOWMASS FIRE MANAGEMENT AREA

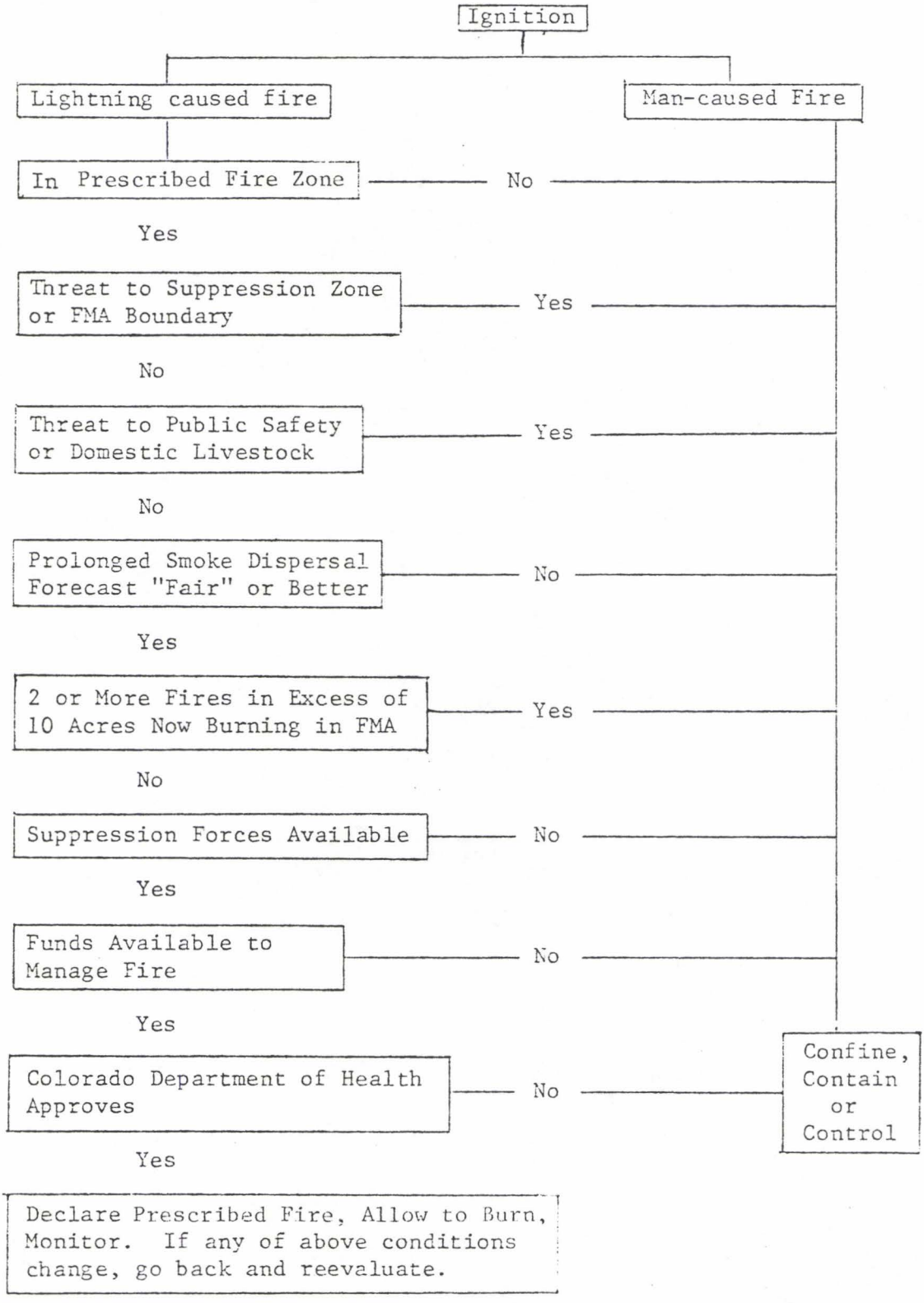


EXHIBIT 2 TO APPENDIX J

DAILY SITUATION REPORT FOR DECLARED NATURAL FIRES
MAROON BELLS-SNOWMASS FIRE MANAGEMENT AREA

Fire Name_____, Date_____, Burning Period No.____

1. Weather Observations:

Time								
Dry bulb temp.								
Wet bulb temp.								
Relative humidity								
Wind speed (S or G)								
Wind direction								

2. Narrative Forecast: _____

3. NFDRS Information:
   Todays actual--ERC: _____, BI: _____
   Tomorrow's predicted--ERC: _____, BI: _____

4. Smoke Dispersal Forecast: _____

5. Description of Fuels:
   Burning: _____
   Threatened: _____

6. Topography: Slope: _____%, Aspect: _____, Elevation of fire: _____

7. Area Increase (since origin or last report): _____acres

8. Description of fire behavior since origin or last report: _____

9. Predicted fire behavior and spread: _____

10. Comments: _____

APPENDIX K

CAPABILITY AREAS

APPENDIX K

CAPABILITY AREAS

In land and resource planning, it is necessary to evaluate the ability of the land to support different kinds and amounts of use. To aid in this determination, the MBSW was stratified into units having similar vegetation, landform, soil, and water characteristics.

The process involved a three-step tier of information. The first step involves detailed vegetation information derived from timber type and range type maps down to ten acre cells which are then checked against aerial photos for accuracy. This information is then combined with detailed landform and hazard information into areas of similar vegetation and landform at 40-acre minimums. The final aggregation into capability areas having a 300 acre minimum size is then made on predominant vegetation species such as spruce-fir, and the non-vegetative categories which are alpine and valley bottoms.

Water is also included into the capability area definition in two ways. First the valley bottom classification is primarily water oriented. Most water concerns can be addressed by using this classification, second are prescription watersheds each of which contain distinct capability areas. Each prescription watershed has been analyzed and rated as to their sensitivity to management action. The capability areas are described below and are provided on maps at White River National Forest Supervisor's Office.

VB-Valley Bottom - Riparian - not restricted to the 300 acre minimum size limit.

The Valley Bottom capability area produced large amounts of wood, herbage and animal biomass because of its deep, moist, fertile soils. It is a relatively stable environment due to its diversity of biotic components. The maintenance of water supply is the single most important abiotic factor.

In order to protect water quality, it is necessary to keep all activities at least 100 feet, but preferably 200 feet away, from a stream or lake. This area acts as an effective material filter for removing sediment and nutrients from surface water runoff.

A-Aspen - Pure stands and mixed with MB, SF, LP and MG.

Most stands of aspen are the direct result of fire or avalanche and are even aged. Stands which are uneven aged can be classified as climax. Other stands are sub-climax to spruce-fir, but are long-lived enough to be treated as true ecosystems.

Because of its thin outer bark, aspen is very susceptible to injury. Injuries to the trunks by careless or malicious wilderness users provide potential entry points for insects, canker, and other disease organisms that may kill the tree.

Aspen stands attract an abundant and varied fauna. Elk and mule deer favor those stands, feeding on available forage and using them for cover, calving, and fawning grounds. Where perennial streams and ponds exist, beaver and muskrat reside.

AL-Alpine - 10,400 and up, alpine, willow, krumholz, talus, and sensitive unstable areas less than 10,400 but adjoining the above.

The alpine community consists of rock areas and several plant communities. The rock consist of solid bedrock, rock glaciers and talus of varying sizes. Human activity, other than mining, can do little damage to this rock area, although public safety is a concern.

Dominant plant species include hairgrass, sedges, and willows on moist sites and fescues, sedges, bluegrass, and numerous forbs on drier sites. Soils are often classified as fragile because of their poor revegetation potential following disturbances. Permanent wildlife residents include the pika and yellow-bellied marmot. Mule deer, elk, mountain sheep and mountain goats use this habitat during the summer months. Areas damaged by campfires, livestock use, etc. can easily be seen due to the openness of alpine areas. Because the growing season is short, such disturbances remain evident for a long time.

MG-Mountain Grassland - ranges in occurrence from low valley, 8,000 feet to alpine, 11,200 feet.

This area consists of dry grasslands and wet meadows. It is more productive than an alpine environment. Due to its openness, campfire scars, trails and other disturbances remain evident for a long time. Mammals using grasslands include elk, mule deer, black bear, coyote, pocket gopher and several other rodents.

Loss of the water supply to the wet meadow might cause a rapid and drastic change in the ecosystem, and particulary in its vegetative component. The water table may normally be above the ground surface much of the summer and even a trail caused by people of livestock can effectively drain the meadow.

MB-Mountain Brush - Oakbrush and Ponderosa Pine.

Most wildlife species utilize this capability area seasonally or in transit to another area. The mule deer are characteristic species since it occupies oakbrush year round. MB is important winter range for deer and elk.

Oakbrush is a relatively hardy species, as it resprouts soon after a fire if the root system has not been killed. Mountain brush usually occurs on dry sites with poor vegetative cover. Here erosion potential may be high if the vegetation is removed by fire.

SF-Spruce Fir - major conifer type which comprises more than 90 percent of the overstory vegetation.

It is a climax ecosystem and is usually uneven aged as it can establish new generations under the influence of its own shade. It tends to hold a site until changed by an external force such as fire. It is then usually replaced by grasslands, aspen, and lodgepole pine which slowly trend toward a spruce-fir community if left undisturbed.

Spruce-fir is an important community for providing cover and some forage for deer and elk during early and mid-successional stages. Black bear, mountain lion, and coyote use all successional stages, but concentrate in areas near cliffs, rims and slides.

Spruce-fir is much more tolerant to abuse than is Aspen and can tolerate heavier levels of use. Indicators of over use include a loss of spruce-fir reproduction, fire wood, and the exposure of tree roots around campsites.

LP-Lodgepole - often occurs complexed with SF and A. Occurs sporadically on periphery areas of MBSW.

DF-Douglas Fir - often occurs complexed with A, LP, MG, and MB. Occurs sporadically on periphery areas of MBSW.

MV-Mixed Vegetation - Includes small patches of heterogenous cover types, i.e., MB, ST, A, MB.

GEOLOGIC FAILURE RISK

Each capability area classification is also rated as to its potential geologic failure risk due to some major activity taking place on the land such as a naturally caused prescribed fire and trail construction. The hazard rating categories are listed below and are provided on maps at White River National Forest Supervisor's Office.

1. None to slight hazard

   Stable or low risk areas. Basic soils, hydrologic, geologic, or engineering investigations recommended. Generally these hazards occur on flat to gentle slopes.

2. Moderate hazard

   Moderate risk areas. Detailed investigations recommended. Generally, hazards occur on moderate to steep slopes, swamps or bogs, or floodplains.

3. Severe hazard

   Unstable or high risk areas. Extensive detailed investigation. Generally, hazards occur on steep to extremely steep slopes, unstable bedrock, or floodplains.

CAPABILITY AREA MANAGEMENT RECOMMENDATIONS

Valley Bottom Capability Area

a. Provide for the maintenance of water quality and quantity by keeping use activities (recreation, livestock) or facilities at least 100 feet and preferably 200 feet from the shoreline of lakes, streams, boggy areas where possible.
b. Livestock utilization does not exceed the following utilization levels for existing vegetation conditions criteria:

Vegetation Condition	Total Allowed Utilization
Poor	10%
Good	15%
Excellent	20%

c. Stream crossings minimized.

Aspen Capability Area

a. Do not provide for overnight use activities in aspen groves, particularly where moist soil conditions are prevalent.
b. Livestock utilization does not exceed the criteria shown for the Valley Bottom Capability Area.
c. Designated campsites are not located in aspen stands.

Alpine Capability Area

a. Do not encourage overnight use activities (recreation, livestock), particularly in areas with wet soil conditions.
b. Discourage campfires, large parties, and pack and saddle stock grazing.
c. Designate campsites only at major destinations where necessary for resource protection.
d. Livestock utilization does not exceed the following utilization levels for existing vegetation condition:

Vegetation Condition	Total Allowed Utilization
Poor	10%
Good	20%
Excellent	30%

Mountain Grassland Capability Area

a. Discourage use activities (recreation, livestock) in area, particularly overnight use activities.
b. Maintain the ground water table from disturbance caused by use activities in meadow areas.
c. Mountain grasslands and meadows are free from campfire scars.
d. Established campsites are not located in wet meadows.
e. Wet meadows are not crossed by trails without appropriate protective measures.
f. Livestock utilization does not exceed the following utilization levels for existing vegetation condition criteria:

Vegetation Condition	Total Allowed Utilization
Poor	None
Fair	30%
Good	40%
Excellent	50%

Mountain Brush and Douglas Fir Capability Areas

a. Provide for continued maintenance of oakbrush, usable by wildlife, by allowing natural events to occur which encourage sprouting.
b. Human use is not concentrated in this area.

Lodgepole Pine Capability Area

a. Encourage use activities.

Spruce-Fir Capability Area

a. Encourage use activities.
b. Designated campsites generally located in this capability area.
c. Livestock utilization will not exceed the criteria shown for the Mountain Grassland Capability Area.

Mixed Vegetation Capability Area

a. Manage according to the actions prescribed for the various components.

APPENDIX L

MBSW SPECIES LIST

APPENDIX L

MBSW SPECIES LIST

MAMMALS

Masked Shrew
Wandering Shrew
Water Shrew
Long legged Myotis
Little brown bat
Townsends' big-eared bat
Big brown bat
Hoarny bat
Long-eared Myotis
Silver-haired bat
Nuttal's Cottontail
Snowshoe Hare
White-tailed Jackrabbit
Least chipmunk
Colorado chipmunk
Uinta chipmunk
Yellow bellied marmot
Richardson's ground squirrel
Rock squirrel
Golden-mantled ground squirrel
Chickaree
Northern pocket gopher
Beaver
Deer mouse
Bushy-tailed wood rat
Gapper's red-backed vole
Heather vole
Meadow vole
Montane vole
Long-tailed vole
Western jumping mouse
Porcupine
Coyote
Red fox
Gray fox
Racoon
Black bear
Wolverine**
Marten
Ermine
Long-tailed weasel
Mink
Badger
Striped skunk
Mountain lion
Canada Lynx**
Bobcat
American elk
Mule deer
Bighorn sheep
Mountain goat

BIRDS

Eared Grebe
Pied-billed Grebe
Canada Goose
Mallard
Pintail
Green-winged Teal
Cinnamon Teal
American Widgeon
Ring-necked Duck
Lesser Scaup
Ruddy Duck
Common Merganser
Turkey Vulture
Goshawk
Sharp-shinned Hawk
Cooper's Hawk
Golden Eagle
Prairie Falcon
Peregrine Falcon*
American Coot
Killdeer
Spotted Sandpiper
Flammulated Owl
Great Horned Owl
Pygmy Owl
Long-eared owl
Saw-whet owl
Common Nighthawk
Poor-Will
Black Swift
White-throated swift
Black-chinned Hummingbird
Broad-tailed Hummingbird
Rufous Hummingbird
Calliope Hummingbird
Belted Kingfisher
Common Flicker
Yellow-bellied Sapsucker

Merlin
American Kestrel
Blue Grouse
White-tailed Ptarmigan
Turkey
Sandhill Crane
Hammond's Flycatcher
Willow Flycathcher
Dusky Flycatcher
Western Flycatcher
Western Woody Pewee
Olive-side Flycatcher
Horned Lark
Violet-green Swallow
Tree Swallow
Cliff Swallow
Purple Martin
Bank Swallow
Barn Swallow
Rough-winged Swallow
Gray Jay
Steller's Jay
Scrub Jay
Black billed Magpie
Common Raven
Clarks Nutcracker
Pinyon Jay
Black-capped Chickadee
Mountain Chickadee
White-breasted Nuthatch
Pygmy Nuthatch
Brown Creeper
Dipper
House Wren
Red Crossbill
Green-tailed Towhee
Rufous-sided Towhee
Savannah Sparrow
Song Sparrow
Vesper Sparrow
Lark Sparrow
Gray-headed Junco
Chipping Sparrow
Brewer's Sparrow
White-Crowned Sparrow
White-Throated Sparrow
Fox Sparrow
Lincoln's Sparrow

Williamson's Sapsucker
Hairy Woodpecker
Downy Woodpecker
Northern Three-toed Woodpecker
Western Kingbird
Cassin's Kingbird
American Robin
Hermit thrush
Swainson's thrush
Veery
Mountain Bluebird
Townsend's Solitaire
Golden-crowned Kinglet
Ruby-crowned Kinglet
Water Pipit
Northern Shrike
Loggerhead Shrike
Warbling Vireo
Orange-crowned Warbler
Virginia's Warbler
Yellow Warbler
Townsend's Warbler
MacGillivray's Warbler
Black-throated Gray Warbler
Wilson's Warbler
Brewer's Blackbird
Brown-headed Cowbird
Black-headed Grosbeak
Zazuli Bunting
Evening Grosbeak
Brown-capped Rosy Finch
Pine Siskin
American Goldfinch
Lesser Goldfinch

AMPHIBIANS

Boreal Toad
Boreal Chorus Frog
Leopard Frog

REPTILES

Desert Short-horned Lizard
Wandering garter snake

FISH

Mountain Whitefish
Colorado Cutthroat
Rainbow trout
Brown trout
Brook trout
Creek chub
Pinute Sculpin
Mottled Sculpin

*Endangered nationally
**Endangered in Colorado

APPENDIX M

LIST OF BROCHURES AND OTHER INFORMATION

APPENDIX M

LIST OF BROCHURES AND OTHER INFORMATION

Woodsy Owl on Backpacking - F.S.

Keeping the "Wild" in Wilderness - F.S.-319

Wilderness Sanitation - F.S.

Mountaineering in the Maroon Bells-Snowmass Wilderness - F.S. Aspen Mountain Rescue

Maroon Bells-Snowmass Wilderness - F.S.

Wilderness Ethic - F.S. and the Roaring Fork Chapter of the Sierra Club

Beaver Trail - F.S.

Backpacking - F.S. Program Aid 1239

White River Forest Map - F.S., 50¢

Maroon Bells Bus Tour Brochure - Roaring Fork Chapter of the Sierra Club, 25¢

Maroon Bells Bus Tour Topo - Hallam Lake (Pitkin County Funding)

Commercial publications

APPENDIX N

WATER QUALITY

APPENDIX N

WATER QUALITY

The planning area contains 12 prescription watersheds which have been identified for the Forest Land and Resource Management Plan. They include:

Thomas Lakes	Upper Crystal
Avalanche Creek	Snowmass Creek
Middle Crystal	Maroon Creek
Carbonate Creek	Cattle Creek
Sopris Creek	East River
Capitol Creek	Middle Brush Creek

Water quality monitoring in the Capitol and Castle Creek watersheds indicate the water is of high quality. (See enclosed water quality table.)

The planning area presently falls under and meets Class B, Colorado State Water Quality Standards.[1] These standards define various chemical and biological tests for water quality. One parameter the state standards do not cover is the occurrence of Giardia (an intestinal parasite). It is thought to be in most of the water of the area and is living in most of the native animal populations. The chief carriers of Giardia are in the order of their importance; beaver, dogs, cattle and man.[2] These animals are important reservoirs of Giardia not only because of the evidence of the parasite found in their populations, but also because of their tendency to defecate in and around water.

The major problems with Giardia is the disinfection of drinking water in the field. Clorine and iodine seem to be effective only at very high concentrations. The Colorado Department of Health suggests boiling drinking water for five minutes as the best disinfection of Giardia in the field.

Additional prescription watershed information is available at the White River National Forest Supervisor's Office.

---

[1]Colorado Department of Health, Water Quality Commission, adopted January 1, 1974, effective June 19, 1974.

[2]Davis, Rovert V. and Charles P. Hibbs, Animal Reservoirs and Cross-Species Transmission of Giardia. Waterborn transmission of Giardias pages 121-122, ERA-60019-79-001 June 1979.

WATER QUALITY DATA

Station Name	Date	Time	Water Temp. (°C)	Dissolved Oxygen (mg/l)	pH	Conductivity (umhos/cm)	Alkalinity (mg/l)	Total Hardness (mg/l)	Ca Hardness (mg/l)	Turbidity (F.T.U.)	Suspended Sediment (mg/l)	Discharge (cfs)
Lower Castle Creek at USGS Station	6/15/78	1100	6	10	7.9	160	55	74	60	3.0	19	230
	7/18/78	0930	7	10	8.6	215	70	96	80	1.0	0.4	103
	8/23/78	1530	12	8	9.0	320	95	158	122	0.7	0.8	31
	6/12/79	1000	4	10	8.6	240	79	104	78	2	9	114
	7/9/79	1400	11	8	7.4	200	75	88	74	1.6	3	165
	8/13/79	1520	11	--	7.8	280	82	130	130	1.6	4	56
Upper Castle Creek	6/15/78	1430	5	10	7.8	120	41	46	42	1.1	60	51
	7/18/78	1330	10	10	8.5	125	41	52	44	0.5	0.8	24
	8/23/78	1430	7	9	8.5	160	54	94	78	0.5	1.6	15
	6/12/79	1130	4	9	8.3	165	48	68	56	3	0	16
	7/9/79	1045	5	9	7.3	125	49	50	46	0.7	1	21.5
	8/14/79	1330	5	--	7.2	130	41	60	54	0.9	1	30
Capitol Creek	6/18/78	1100	7	10	9.0	250	109	120	90	80	23.6	70
	7/20/78	1330	11	9	9.0	360	102	176	130	2.5	8.4	39
	8/21/78	1130	8	9	9.0	580	112	298	232	1.5	1.6	13.9
	7/5/79	1400	8.5	9	7.9	275	116	120	110	11	27	60
	8/13/79	1040	8	--	8.6	490	106	254	254	2.3	1	30

APPENDIX O

WILDERNESS TRAVEL SIMULATOR

APPENDIX O

WILDERNESS TRAVEL SIMULATOR DATA

The wilderness travel simulator is a tool that allows recreation planners and managers to gain information about the likely results of different visitor management schemes prior to on-the-ground management actions. It provides simplified abstractions of the complex travel patterns of visitors to an area and levels of encounters or solitude experienced by visitors (Lucas and Shechter 1977). Scenarios that simulate the travel patterns of visitors for each management alternative can be quickly and cheaply produced (on paper). The simulator does not make management decisions, but does provide an indication of the effects of certain management alternatives related to people management for evaluation by managers. In effect, the manager can ask "what if" types of questions.

In general, the travel simulator is particularly well-suited to planning issues concerning the distribution of users or modification of travel patterns. The simulator can aid the manager in deciding which management alternative will most likely achieve the management objectives for the area. For example, if one management objective relates to permitting no more than ten parties to camp at Lake Y on any one night, should the number of entering parties be altered at Trailhead A or B, or both? The travel simulator indicates which trailheads are used by what proportions of the parties visiting key areas, to aid in planning where, and how much, to modify numbers of entering parties (see Table 3). Or, if managers want a certain level of campsite solitude to be available, the simulator will show if and where the goal is not being reached, and modified use patterns can be tested to find one that meets the standard minimum restrictions.

The travel simulator functions on probabilities; that is, what is the probability that a party will turn right instead of left at a trail junction or camp at a particular lake. The probability data in this project came from interviewing a sample of users as they were exiting the study area during July and August, 1978. These data had to be supplemented with some estimated input data based on the best judgment of managers familiar with the local situation. The types of input data used included travel routes, sizes of parties, days and times of entry, modes of travel, speeds of travel, camping sites, and numbers of nights at each location. The simulator printouts are available at the Aspen Ranger District, White River National Forest, Colorado. Some key summary tables follow.

The primary usefulness of the wilderness travel simulator with regard to the planning process in Figure 3 is that it aids in inventorying and analyzing the current situation, developing standards (see Table 1, for example), analyzing and evaluating alternative directions, and monitoring the selected direction. The simulator is also useful in delineating wilderness opportunity areas and in estimating carrying capacities. Updated and strengthened input data will be needed for future monitoring and further development of use management plans.

For additional information, see:

1. Lucas, R.C., and M. Shechter. 1977. A recreational visitor travel simulation model as aid to management planning. USDA Forest Service, Gen. Tech. Report PSW-20. Pacific Southwest Forest and Range Expt. Sta., Box 245, Berkeley, California 94701.

2. Shechter, Mordechai, and Robert C. Lucas. 1978. Simulation of recreational use for park and wilderness management. Baltimore: Johns Hopkins Univ. Press for Resources for the Future. 220 p.

Table 1. The likelihood of encountering other parties during typical peak-season day (late July/early August) by wilderness opportunity areas for the Maroon Bells-Snowmass Wilderness.[a]

Type of Encounters	Wilderness Opportunity Areas			
	Transition	Semi-Primitive	Primitive	Pristine
Expected number of trail encounters during typical peak-season day	>20	5-20	0-5	0-2
Expected number of trail encounters per trail mile of travel during typical peak-season day	15	1.5	0.2	0.1
Expected number of camp encounters during typical peak-season day/night (number of neighboring camper groups)	>5	3-5	1-3	0-1
Expected probability of camping alone during typical peak-season day/night (no other parties within sight or sound)	<10%	10-40%	40-70%	>70%

[a]The likelihoods of encountering other parties were derived from the MBSW wilderness travel simulator "base case" which represented the 1978 peak-use recreation season (late July/early August).

Table 2. The average number of trail encounters with other parties for an average party travelling selected trail segments of the MBSW during a typical peak-season day (late July/early August).

Trail Segments	Average Number of Trail Encounters with Other Parties
Transition	
1) Maroon Lake parking lot to half-mile past Crater Lake (75-83)[a]	34.0
Semi-Primitive	
2) Crater Lake to West Maroon Pass (85-94)[a]	4.0
3) Crater Lake to Snowmass Lake (398-357)[a]	17.0
4) Snowmass Lake trailhead parking lot to Snowmass Lake (325-352)[a]	20.0
5) Snowmass Lake to Geneva Lake via Fravert Basin (151-97)[a]	6.0
6) West Maroon Pass to Geneva Lake via Fravert Basin (151-97)[a]	3.0
7) Capitol trailhead to Capitol Lake (266-278)[a]	7.0
8) Avalanche trailhead to West Avalanche Creek (249-234)[a]	6.5
9) East Maroon Campground to East Maroon Pass (73-52)[a]	3.4
10) Conundrum trailhead parking lot to Conundrum Hot Springs (12-30)[a]	7.3
Primitive	
11) Snowmass Lake trail to Pierre Lakes (314-305)[a]	1.4
12) Snowmass Campground to Willow Lakes (431-407)[a]	1.4
13) Hellroaring Creek trail to Hardscrabble Lake (350-262)[a]	0.5
14) Redstone trailhead to Avalanche Creek (214-228)[a]	0.4
Pristine	
15) West Snowmass Creek to Capitol Peak (296-284)[a]	1.2
16) Avalanche Creek to Avalanche Pass (192-200)[a]	0.1
17) Willow Lake to White Lake (422-409)[a]	0.1

[a]The specific trail segment reference numbers in parens can be located on the MBSW wilderness simulator base case map on file at the Aspen Ranger District Office.

Table 3. Percentage of camper groups at selected camp areas using different trailheads to reach the camp area.

Camp Areas	Entry Trailheads,[a] Ranked by Use				
	1	2	3	4	5
Conundrum Hot Springs	Conundrum (9) 78%	East Maroon (8) 16%	Copper Creek (12) 6%	-	-
Crater Lake	Maroon Lake (7) 97%	Snowmass (4) 2%	Crystal (14) 1%	-	-
Snowmass Lake	Snowmass (4) 54%	Maroon Lake (7) 43%	East Snowmass (5) 2%	Crystal (14) 0.5%	Lead King (15) 0.5%
Avalanche Lake	Avalanche Creek (18) 70%	Redstone (17) 10%	Lead King (15) 7%	Carbonate (16) 7%	Capitol (2) 6%
Capitol Lake	Capitol (2) 90%	Nickelson (3) 3%	Avalanche (18) 3%	Redstone (17) 3%	Snowmass (4) 1%

[a]The trailhead reference numbers in parens can be located on the MBSW wilderness simulator base case map on file at the Aspen Ranger District office.

Table 4. Average number and percent of parties entering the MBSW on a typical peak-season day (late July/early August) by trailheads.[a]

Trailheads[b]	Average Number of Parties Entering Per Peak-Season Day	Percent of Total Parties Entering Per Peak-Season Day (N=135)
(1) Williams Lake	0.9	0.6
(2) Capitol Lake	6.2	4.6
(3) Nickelson	0.2	0.1
(4) West Snowmass	23.0	17.1
(5) East Snowmass	1.4	1.1
(6) Willow Creek	0.0	0.0
(7) West Maroon	82.0	61.1
(8) East Maroon	3.5	2.6
(9) Conundrum	6.2	4.6
(10) American Lake	0.1	0.1
(11) Cathedral Lake	0.2	0.1
(12) Copper Creek	1.5	1.1
(13) East Fork Crystal	0.1	0.1
(14) North Fork Crystal	1.5	1.1
(15) Silver Creek	0.2	0.1
(16) Carbonate Creek	0.1	0.1
(17) Redstone	0.6	0.5
(18) Avalanche Creek	6.8	5.0
TOTAL	134.5	100.0

[a]Data obtained from Summary Table 1 of the wilderness travel simulator base case run.

[b]The specific trailhead reference points in parens can be located on the MBSW wilderness simulator base case map on file at the Aspen District office.

Table 5. Average number of parties and encounters during a typical peak-season day in the MBSW by the four interim management alternative directions.[a]

Types of Encounters	Interim Management Alternative Directions			
	1 (increase total use by 15%)	2 (maintain current use levels)	3 (decrease total use by 15%)	4 (decrease total use by 45%)
Average total number of parties per peak-season day in MBSW (Table 2)	327	293	250	159
Average number of day-use parties per peak-season day (Table 2 minus 6)	73	60	50	34
Average number of camping parties per peak-season day (Table 6)	254	234	200	125
Average number of trail encounters for day-use and camper parties per party per peak-season day (Table 2)	25	17	17	12
Average number of trail encounters per camper party per peak-season day (Table 6)	15	10	11	7
Average number of camp encounters per camper party per peak-season day (Table 3)	12	8	8	6

[a]Data obtained from wilderness travel simulations (5 replications).

Table 6. The percent of parties having different numbers of trail encounters for the four interim management directions during a typical peak-season day (late July/early August).[a]

Number of trail encounters per party during peak-season day	Interim Management Alternative Directions							
	1 (increase total use by 15%)		2 (maintain current use)		3 (decrease total use by 15%)		4 (decrease total use by 45%)	
	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent
0	14.6	14.6	15.0	15.0	16.1	16.1	18.7	18.7
1-2	7.1	21.7	9.6	24.6	9.6	25.7	13.0	31.7
3-4	6.7	28.4	8.2	32.8	8.4	34.1	9.1	40.8
5-9	12.7	41.1	16.4	49.2	13.7	47.8	17.0	57.8
10-19	14.0	55.7	19.1	68.3	19.0	66.8	22.5	80.3
20-29	13.7	68.8	12.1	80.4	13.4	80.2	9.6	89.9
30+	31.2	100.0	19.6	100.0	19.8	100.0	10.1	100.0

[a]Data obtained from Summary Table 2 of the wilderness travel simulation runs.

Table 7. The percent of camper parties having different numbers of camp encounters for the four interim management directions during a typical peak-season day (late July/early August).[a]

Number of camp encounters per party during peak-season day	Interim Management Alternative Directions							
	1 (increase use by 15%)		2 (maintain current use)		3 (decrease use by 15%)		4 (decrease use by 45%)	
	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent	Percent of Parties	Cumulative Percent
0	14.3	14.3	15.3	15.3	17.1	17.1	24.8	24.8
1-2	25.9	40.2	27.0	43.0	30.0	47.1	31.9	56.7
3-4	16.3	56.5	15.7	58.7	13.7	60.8	13.2	69.9
5-9	14.7	71.2	16.8	75.5	14.7	75.5	10.8	80.7
10-19	10.1	81.3	11.2	86.7	9.9	85.4	10.0	90.7
20-29	4.9	86.2	6.7	93.4	6.1	91.5	6.5	97.2
30+	13.8	100.0	6.6	100.0	8.5	100.0	2.8	100.0

[a]Data obtained from Summary Table 3 of the wilderness travel simulation runs.

APPENDIX P

CAMPING CAPACITIES

APPENDIX P

CAMPING CAPACITIES

Camping GAOT (groups at one time) capacities or standards have been assigned to each wilderness opportunity area within each management unit. The capacities are reflective of the current biophysical, social and managerial situation and were determined by considering the following factors:

1. Biophysical Factors

   - number of acres under 30 percent slope
   - vegetative cover (capability areas)
   - number and type of attractions (lakes, streams, vistas, cultural resources, trails)
   - critical wildlife habitat areas
   - current campsite conditions

2. Social Factors

   - predominant type of recreation use (day-use, overnight use, hiker parties, horse parties, large parties)
   - wilderness travel patterns (amount, type, and locations of use and encounters)
   - survey data which identified currently perceived crowded areas
   - other social uses (e.g., mining, grazing)

3. Managerial Factors

   - goals and objectives of area-wide and wilderness opportunity area prescriptions
   - distance prescriptions from lakes, streams, vistas, trails, and other campsites

By considering these factors, a theoretical maximum number of camping groups at one time was determined. An adjustment coefficient needs to be applied to theoretical maximum number of camping GAOT in order to reflect (1) the need to provide users with a freedom of choice, (2) the need to maintain campsite conditions (biophysical elements), and (3) the temporal and spatial distribution of recreation camping groups. Based upon professional judgement, an adjustment coefficient of 50 percent should be applied to the theoretical maximum camping GAOT assigned to each wilderness opportunity area within each management unit in Table 1 (see also Management Unit Direction).[a]

---

[a]Seventy percent utilization is considered full utilization at Forest Service developed recreation sites (FSM 2300). Several Colorado downhill ski areas consider 30 to 40 percent utilization to be full utilization.

For example: wilderness opportunity area X in management unit Y

24 GAOT's (theoretical maximum in Table 1 and Management Unit Direction)

x .50 (adjustment coefficient)

12 GAOT's (management standard)

The GAOT standard might need periodic adjustment as new information becomes available or when the campsite conditions fall below the level of acceptable impacts (see Appendix S for Campsite Condition Rating Classes and Size of Campsites).

Table 1. The number of acres on less than 30 percent slopes and recommended camping groups at one time (GAOT) by wilderness opportunity areas and management units.[a]

Management Units	Wilderness Opportunity Areas									
	Transition		Semi-Primitive		Primitive		Pristine		Total	
	Acres	GAOT	Acres	GAOT	Acres	GAOT	Acres	GAOT	Acres	GAOT
American/Cathedral	-	-	152	18	1,930	12	-	-	2,082	30
Conundrum	-	-	376	24	838	10	-	-	1,214	34
East Maroon	-	-	150	10	1,910	14	-	-	2,060	24
West Maroon	253	14	140	15	1,087	6	-	-	1,480	35
Willow	-	-	-	-	460	6	895	1	1,355	7
East Snowmass	-	-	-	-	627	6	-	-	627	6
Haystack	-	-	-	-	2,292	15	-	-	2,292	15
Snowmass Creek	-	-	188	25	891	3	1,735	6	2,814	34
Snowmass Lake	-	-	258	20	108	2	25	1	391	33
Bear Creek	-	-	-	-	725	12	-	-	725	12
Capitol	-	-	292	31	2,801	7	0	0	3,093	38
Sopris	-	-	157	30	1,488	12	-	-	1,645	42
Avalanche	-	-	270	35	1,251	16	668	3	2,189	54
Redstone	-	-	-	-	944	10	649	3	1,593	13
Arkansas Mtn.	-	-	256	20	683	10	-	-	939	30
Geneva	-	-	98	20	304	6	209	4	611	30
Fravert	-	-	208	25	2,225	20	-	-	2,433	45
Copper	-	-	200	20	1,601	6	-	-	1,801	26
Brush	-	-	-	-	1,993	8	-	-	1,993	8
TOTAL	253	14	2,745	293	24,158	181	4,181	18	31,347	506

[a]Camping groups at one time (GAOT) were determined by considering wilderness opportunity area, designated campsites, slope, vegetative cover, attraction sites (e.g., lakes, vistas), critical habitat areas, and wilderness travel patterns. See Table 2 for subsequent camping coefficients.

Table 2. Camping capacity coefficients for wilderness opportunity areas derived from Table 1.

Wilderness Opportunity Area	Number of Camping Parties at One Time/Acre	Number of Camping Persons at One Time/Acre	Number of Acres Per Camping Parties at One Time	Number of Camping Parties at One Time Per Square Mile
Transition[a]	.055	.17	18 acres	35.5
Semi-primitive	.110	.33	9 acres	70.4
Primitive	.007	.022	133 acres	4.5
Pristine	.004	.012	232 acres	2.6

[a]Transition area coefficients appear to be inconsistent with the three other opportunity areas but, in actuality, reflects the high volume of day-use.

APPENDIX Q

VISIBILITY MONITORING GUIDELINES

APPENDIX Q

VISIBILITY MONITORING GUIDELINES

Contact Recreation Lands staff, USFS, Region 2.

APPENDIX R

TRAIL MAINTENANCE LEVELS

APPENDIX R

TRAIL MAINTENANCE LEVELS

Excerpted from USDA-Forest Service Management Information Handbook (November, 1978) 2.53-13,14.

Trail Maintenance - Level 1

Trails maintained for primitive experience level. Custodial care only. No tread maintenance. Drainage functional and not likely to fail. Trail sides not brushed but tread is kept passible. Small slides may remain except for erosion potential. Structures maintained as needed.

Trail Maintenance - Level 2

Trails maintained for near-primitive experience level. Tread maintained for public safety. Logs or similar rustic structures may be provided at stream crossings. Drainage same as Level 1.

Trail Maintenance - Level 3

Trails maintained for intermediate experience level. Tread maintained for public safety and user convenience. Drainage same as Level 1. Trailsides brushed out at Handbook standards. Structures maintained to original design standards.

Trail Maintenance - Level 4

Trails maintained at relatively high standards to provide for public safety and convenience. Tread relatively smooth, firm and may require stabilization. These trails are generally maintained for family or senior citizen use.

Trail Maintenance - Level 5

Trails maintained for high use and experience levels, including special purposes such as VIS trails, bicycle trails, trails to major vista points, trails for the handicapped, etc. Basic care same as Level 4 but patching of paved tread may be needed annually. Trail sides maintained to meet high visual quality.

APPENDIX S

CAMPSITE CONDITION RATING CLASSES AND SIZE OF CAMPSITES

APPENDIX S

CAMPSITE CONDITION RATING CLASSES

AND SIZE OF CAMPSITES

Table 1. Campsite condition rating classes.[a]

Condition Rating Class	Visible Indicators Attributed to Recreation Use
1	Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace. Bare mineral soil not apparent.
2	Ground vegetation worn away around fireplace or center of activity.
3	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.
4	Bare mineral soil widespread. Tree roots exposed on the surface.
5	Soil erosion obvious. Trees reduced in vigor or dead.

[a]These rating classes were proposed by Sidney S. Frissell in Journal of Forestry article entitled "Judging Recreation Impacts on Wilderness Campsite" (August, 1978, pp. 481-483). These rating classes will be refined with additional field work.

Table 2. The maximum area (square feet) of bare mineral soil and the campsite condition rating class for types of campsites and predominant use by wilderness opportunity area.

Type of Campsite and Predominant Use	Transition		Semi-Primitive		Primitive		Pristine	
	Area	Rating Class	Area	Rating Class	Area	Rating Class	Area	Rating Class
Designated and non-designated campsites:								
backpackers:	225' (15 x 15)	3	225' (15 x 15)	3	100' (10 x 10)	2	49' (7 x 7)	2
horse users:	Prohibited		900' (30 x 30)	3	900' (30 x 30)	2	200' (10 x 20)	2
Large party campsites (more than 10 people or horses requiring special use permit):								
backpackers:	Prohibited		Prohibited		900' (30 x 30)	3	450' (15 x 30)	2
horse users:	Prohibited		Prohibited		1,600' (40 x 40)	3	900' (30 x 30)	2

[a]Campsites generally have concentric rings of varying types and degrees of impacts extending from the center of the site (e.g., campfire ring). Bare mineral soil is a type of impact generally evident in the center of the site and was the criterion selected because it is less subjective and/or difficult to assess than dying vegetation, root exposure, or disturbed humus and litter.

[b]The degree of square footage of bare mineral soil permitted is based on research findings: (1) Frissel, S., 1973, The Impact of Wilderness Visitors on Natural Ecosystems. Report submitted to USFS-INT, (2) Brown, P. J. and J. H. Schomaker, 1974, Final Report on Criteria for Potential Wilderness Campsites. Report submitted to USFS-INT. These figures will need adjusting with additional management experience and research findings.

APPENDIX T

MONITORING AND EVALUATION

APPENDIX T

MONITORING AND EVALUATION

The National Forest Management Act of 1976 (Public Law 94-588) mandates and establishes the framework for development and revision of Forest Land management plans. Subsequent regulations (Federal Register/Vol. 44 No. 181/Monday, September 17, 1979/Rules and Regulations) establishes procedures and requirements to guide land and resource management planning in the National Forest System.

As recognized and discussed in the Law and Regulations, an essential ingredient of Forest Planning Process is the monitoring and evaluation phase. Specifically, the Regulations state (2915(k)):

> *(k) Monitoring and evaluation. At intervals established in the plan, management practices will be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. The results of monitoring and evaluation may be used to analyze the management situation during revision of the plan as provided in paragraphs (k) (1), (2) and (3) of this section.*
>
> *(1) The plan will describe the following monitoring activities:*
> *(i) The actions, effects, or resources to be measured, and the frequency of measurements;*
> *(ii) Expected precision and reliability of the monitoring process; and*
> *(iii) The time when evaluation will be reported.*
> *(2) Evaluation reports will contain for each monitored management practice at least a quantitative estimate of performance comparing outputs and services and their costs with those projected by the plan and documentation of evaluated measured effects.*
> *(3) Based upon the evaluation reports, the responsible official will make changes in management direction, or revise or amend the plan as necessary to meet the goals and objectives.*

Monitoring and evaluation can be viewed as a tool, a catalyst, which aids in the development and continuance of an effective, efficient, and responsive management direction. Its specific purpose is twofold: (1) to provide an information base for making decisions related to the refinement or altering of the specific management direction, and (2) to suggest to other resource planners, managers, and researchers what ideas or techniques might or might not work and subsequently advance the state of land and resource planning and management.

More specifically, monitoring is a continuous data or information collection and storage activity which occurs during the implementation stage of the forest planning process. Monitoring activities might range from simply recording vehicular miles driven to very systematic water quality testing procedures. Evaluation is a data or information analysis and feedback activity for the purpose of making judgments of value related to the management direction. This activity occurs at a predetermined time identified in the management direction.

The framework for monitoring and evaluation activities for the Maroon Bells-Snowmass Interim Direction is depicted in Figure T-1. There are three aspects of monitoring and evaluation: (1) assessing the management inputs or efforts, (2) assessing the management outputs or effects, and (3) assessing the methods or process used in the two preceding assessments. Inputs relate to the management activities prescribed in the five prescriptions and the management unit direction. Outputs relate to the goals and objectives prescribed in the five prescriptions. Methods relate to the tools and procedures prescribed within the wilderness elements of the five prescriptions. While these three aspects have been integrated into the Maroon Bells-Snowmass Interim Direction, additional specifics (e.g., how will data be analyzed and reported in evaluation report) will be forthcoming as a part of the Cooperative Management-Research Demonstration Project.

ASPECTS OF MONITORING AND EVALUATION

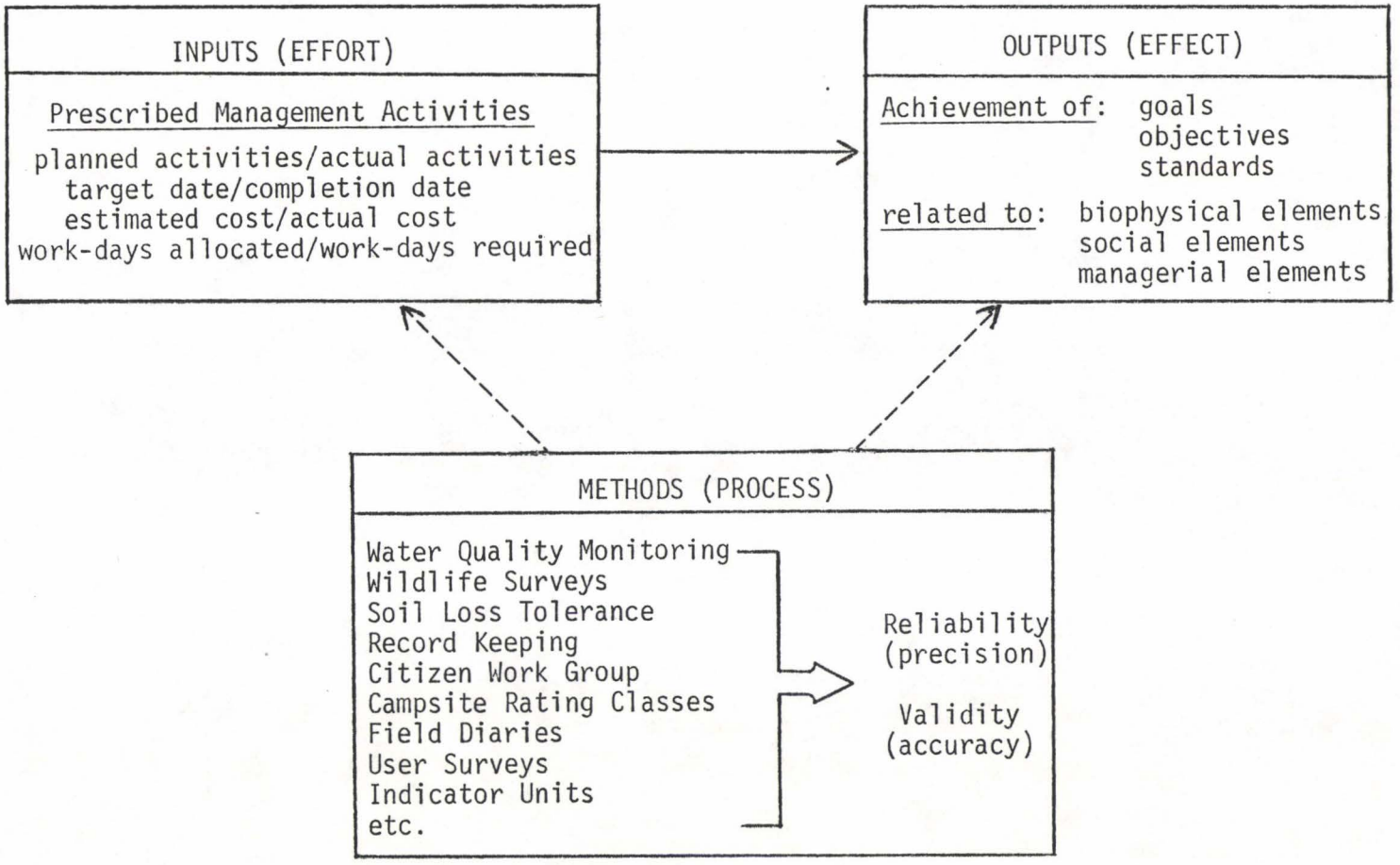
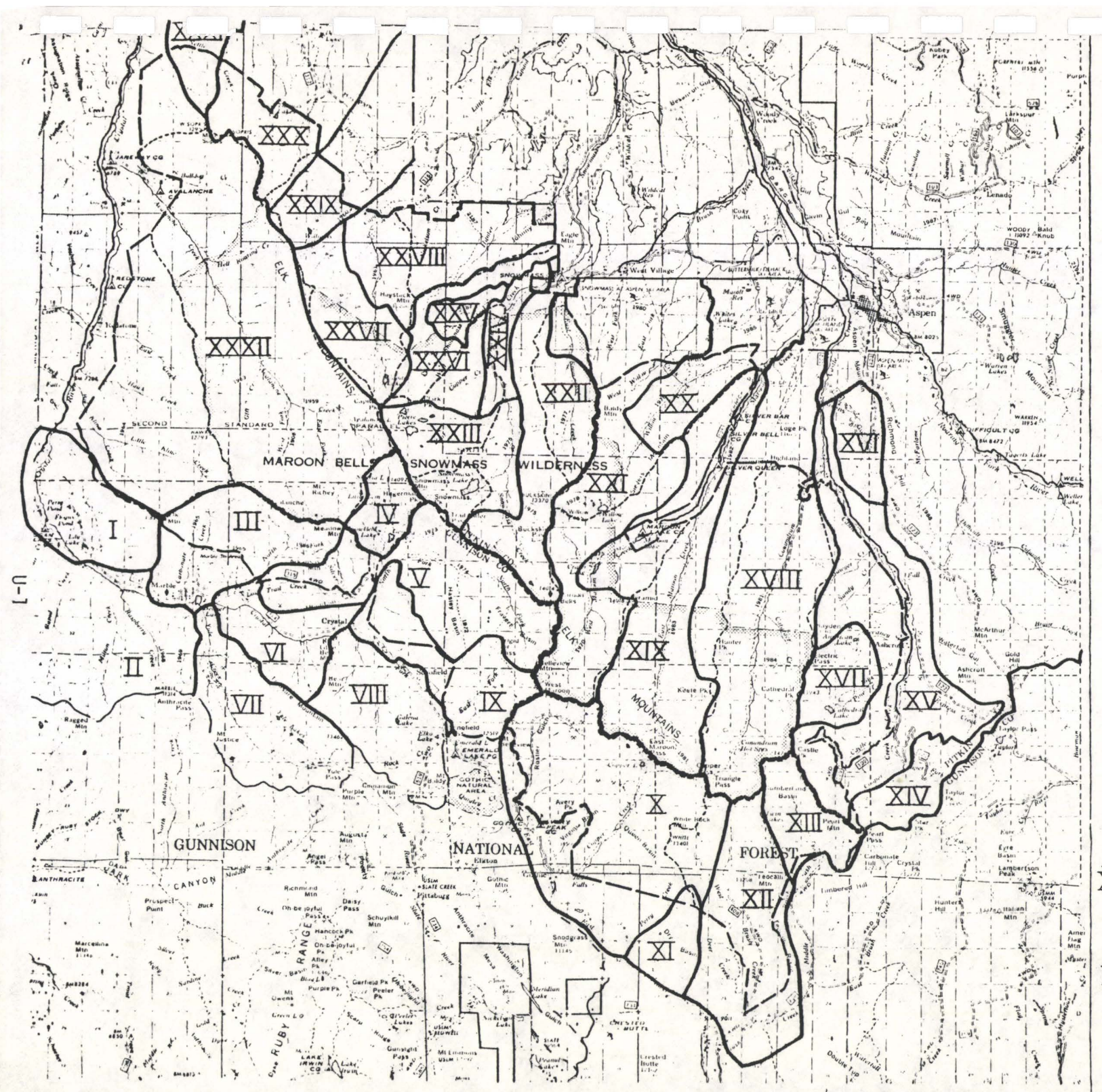


Figure T-1

APPENDIX U

MAPS


MAROON BELLS SNOWMASS WILDERNESS
GUNNISON NATIONAL FOREST
ELK MOUNTAINS
RAGGEDS WILDERNESS
RUBY RANGE
ANTHRACITE RANGE
Aspen
West Village
Crested Butte
Gothic
Crystal
Marble
Redstone
Carbondale
Snowmass
Pitkin
Gunnison Co
Pitkin Co
Garfield Co
Eagle Co
Mt. Sopris
Capitol Peak
Maroon Peak
Pyramid Peak
Castle Peak
Conundrum Peak
Snowmass Mtn.
Hayden Pk.
Ragged Mtn.
Mt. Richthofen
Mt. Daly
Mt. Crested Butte
Mt. Emmons
Mt. Owen
Mt. Gunnison
Mt. Lamborn
Mt. Tilton
Mt. Baldy
Mt. Axtell
Mt. Carbon
Mt. Teocalli
Mt. Peter
Mt. Paul
Mt. Cleveland
Mt. Bellview
Mt. Justice
Mt. Sheep
Mt. Lester
Mt. Richmond
Mt. Schuylkill
Mt. Italian
Mt. Lambertson
Mt. Carbonate
Mt. Crystal
Mt. Hunter
Mt. Cathedral
Mt. McArthur
Mt. Ashcroft
Mt. Gold Hill
Mt. Warren
Mt. Woody
Mt. Bald Knob
Mt. Lenado
Mt. Eagle
Mt. Haystack
Mt. Daly
Mt. Richey
Mt. Meadow
Mt. Purple
Mt. Augusta
Mt. Antero
Mt. Princeton
Mt. Yale
Mt. Harvard
Mt. Columbia
Mt. Oxford
Mt. Belford
Mt. Missouri
Mt. Elbert
Mt. Massive
Mt. Sherman
Mt. Democrat
Mt. Lincoln
Mt. Bross
Mt. Cameron
Mt. Silverheels
Mt. Guyot
Mt. Sniktau
Mt. Evans
Mt. Bierstadt
Mt. Blue Sky
Mt. Gray
Mt. Parnassus
Mt. Spalding
Mt. Sanitas
Mt. Flagstaff
Mt. Audubon
Mt. Arapahoe
Mt. Neva
Mt. Toll
Mt. Albion
Mt. Sunset
Mt. Ida
Mt. Alice
Mt. Bancroft
Mt. Evans
Mt. Goliath
Mt. Spalding
Mt. Parnassus
Mt. Gray
Mt. Blue Sky
Mt. Bierstadt

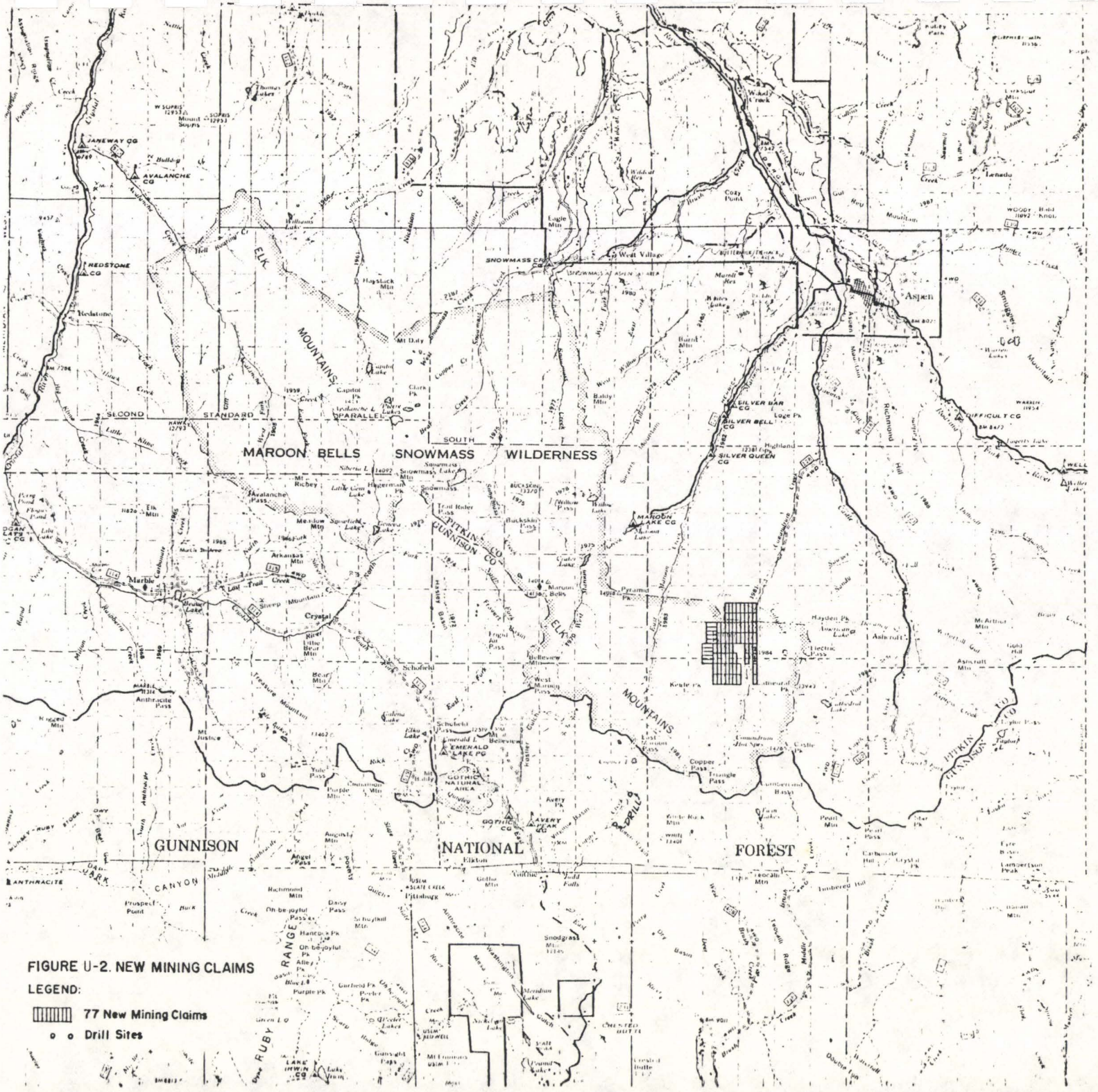


FIGURE U-2. NEW MINING CLAIMS

LEGEND:

77 New Mining Claims

o o Drill Sites

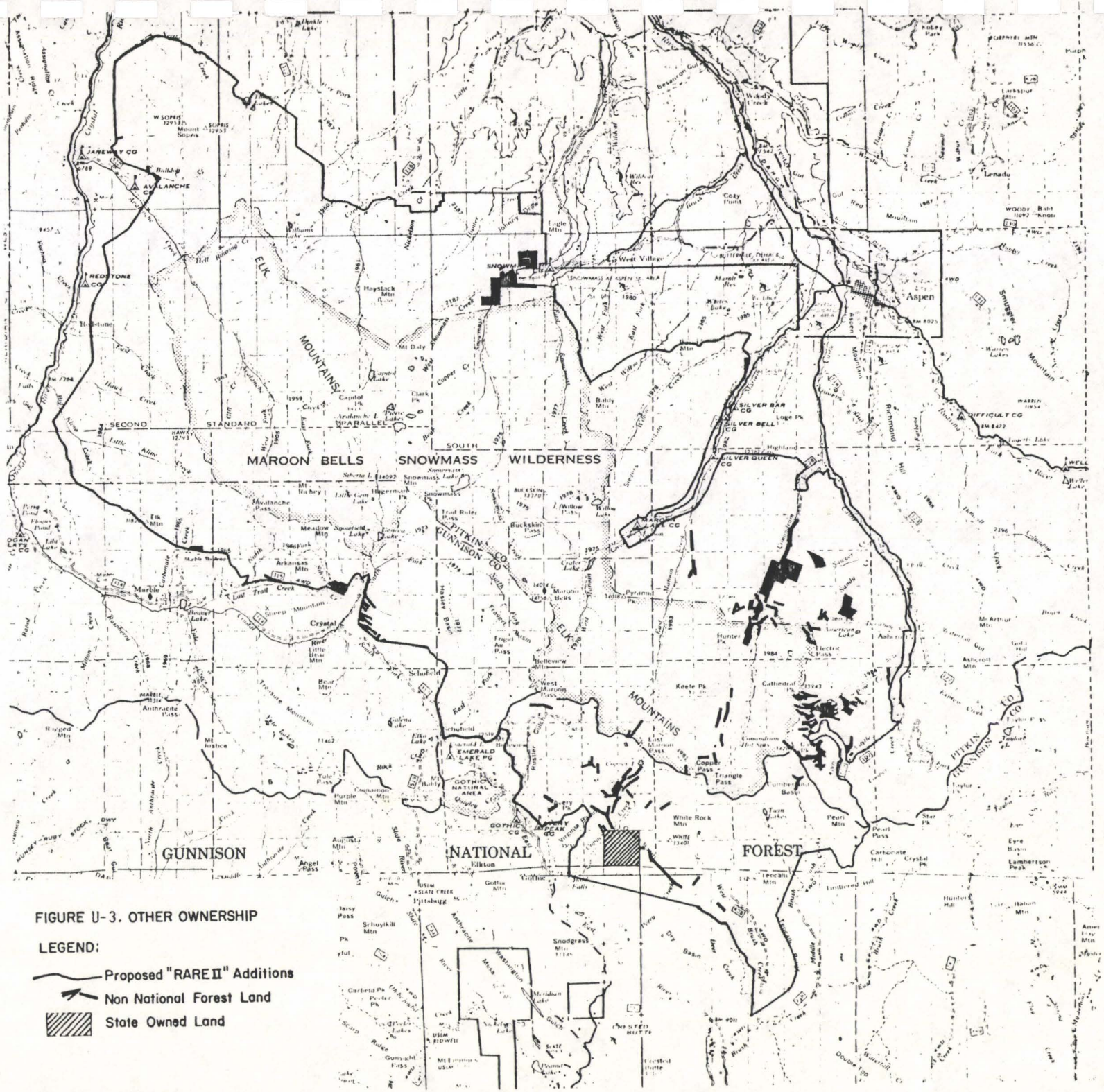


FIGURE U-3. OTHER OWNERSHIP

LEGEND:

- Proposed "RARE II" Additions
- Non National Forest Land
- State Owned Land

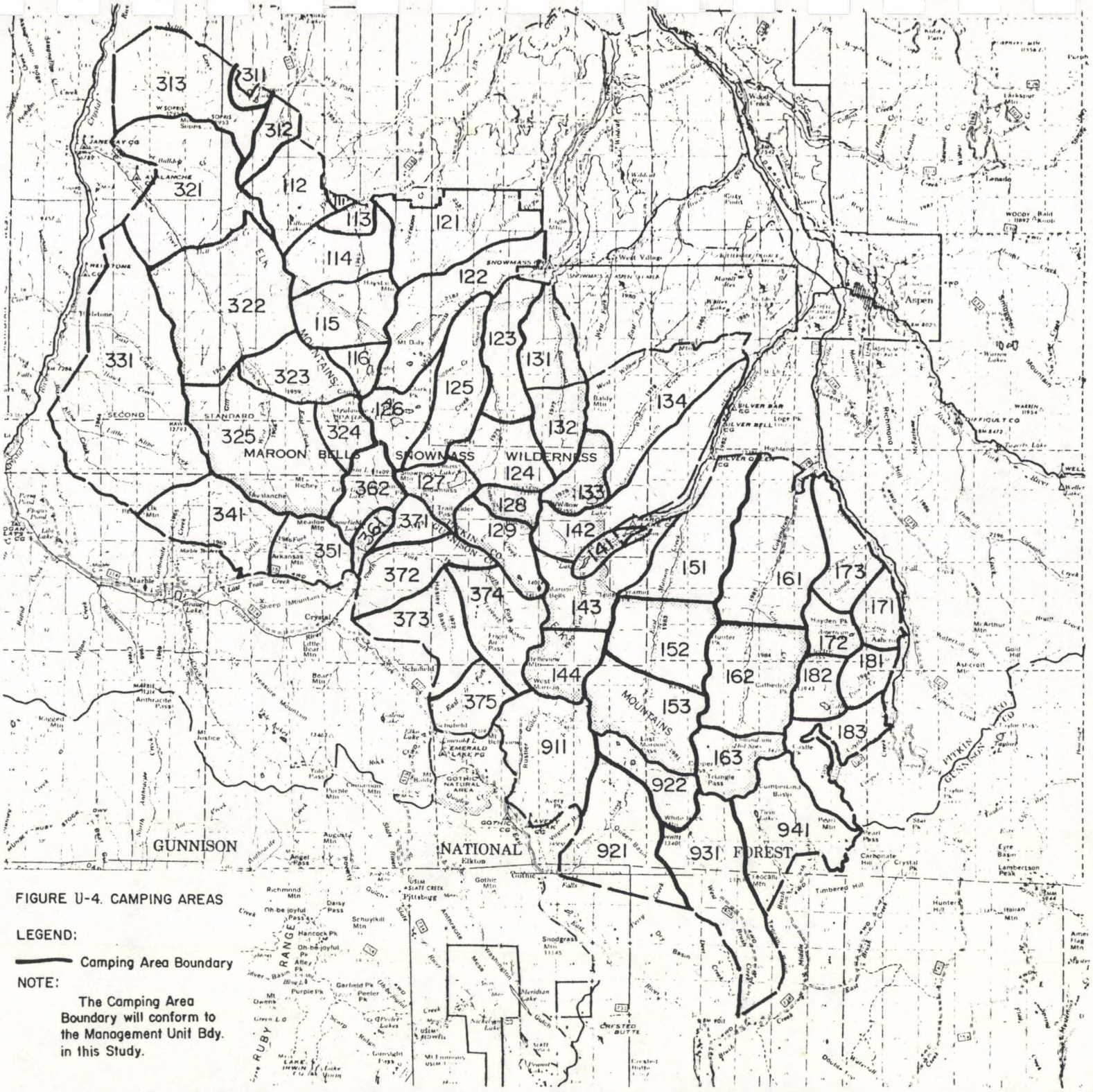


FIGURE U-4. CAMPING AREAS

LEGEND:

Camping Area Boundary

NOTE:

The Camping Area Boundary will conform to the Management Unit Bdy. in this Study.

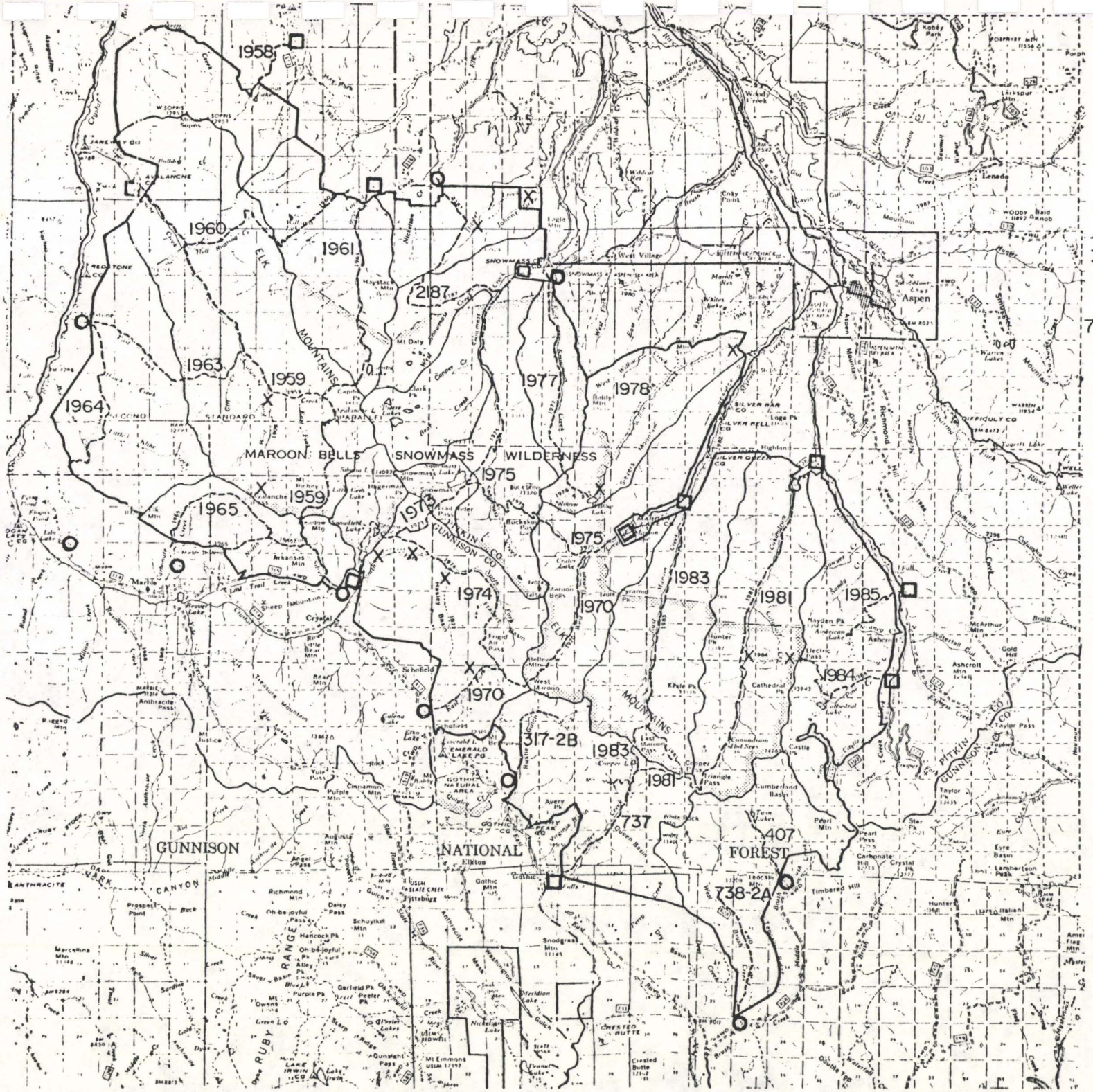


FIGURE U-5. TRANSPORTATIO
TRAILS SYSTEM

LEGEND:

——— Management Unit Boundary

- - - - - Trail

317-2B Rustler Gulch Trail
407 Twin Lakes Trail
737 Copper Lake Trail
738-2A West Brush Creek Trail
1958 Thomas Lakes Trail
1959 Avalanche - Silver Creek Trail
1960 Hell Roaring Trail
1961 Capitol Creek Trail
1963 East Creek-Gift Creek Trail
1964 Lily Lake Trail
1965 Arkansas Mountain Trail
1970 West Maroon Pass Trail
1973 Geneva Trail
1974 North Fork Trail
1975 Maroon-Snowmass Trail
1977 East Snowmass Trail
1978 Willow Creek Trail
1981 Conundrum Trail
1983 East Maroon Trail
1984 Cathedral Lake Trail
1985 American Lake Trail
2187 West Snowmass Trail
X X Not Maintained as System Trails

□ Major Trailhead
○ Minor Trailhead

APPENDIX V

JUSTIFICATION FOR SPECIFIC MANAGEMENT ACTIONS

APPENDIX V

JUSTIFICATION FOR SPECIFIC MANAGEMENT ACTIONS

1. A transition area is small in size. It is located no more than two or three miles from the trailhead in a corridor 400 feet wide along trails and 1/4 mile from lakes and other major attractions. Sheep and cattle use can be routed around this area without adversely affecting permitted livestock numbers. Horses only have to move a mile or two up the trail to get out of a transition area. Restricting cattle, sheep, and horse use in this area does not adversely affect these uses. It does provide recreationists with outstanding scenery, the major reason most people visit this type of an area.

2. The 10 people and 10 horse limit and the accompanying special use permit provision gives the Forest Service the flexibility to accommodate large party use with minimal impact on the more numerous small parties (see also Bev Driver's research data, Appendix W).

3. The 100 foot distance was chosen for the following reasons.
   a. The hydrologist on the White River National Forest recommended 200 feet as a camping distance from water, but he also said that 100 feet would be a minimum distance. This distance protects shoreline and streamside vegetation and provides a water quality buffer for sanitation purposes. Due to the fact that the valleys in the MBSW tend to be narrow and campsite locations limited, the 100 foot distance was chosen.
   b. All CFR regulations must be short, easy to read, and understandable.
   c. A minimum distance between campsites and trails is considered to be desirable. It provides a degree of solitude or privacy between people camping and people using the trails. In order to complement "b" above, the 100 foot distance was also chosen for campsite-trail spacing.

   The exception to the 100 foot rule is allowed only under the semi-primitive prescription because it is the only type where such an exception is suitable. A transition area is devoted mainly to day use and outstanding scenery; camping opportunities are of secondary importance. A semi-primitive area is devoted mainly to camping; solitude and other wilderness opportunities are of secondary importance. In primitive and pristine areas, solitude and related wilderness opportunities are of primary importance; camping is of secondary importance and must not be allowed to increase to the point where normally undesirable campsites must be used.

4. In the long run, it is the policy as stated in the wilderness act to acquire privately-owned land within wilderness (Wilderness Act of 1964, Sections 5a, 5c, and 6a).

5. A transition zone receives very high day use visitation. Most visitors are in search of outstanding scenery. Uncontrolled camping would spoil the scenery for day users. Therefore, camping is only allowed in sites the Forest Service has approved.

6. The condition class and size standards in Appendix S provide for minimum resource standards for campsites to protect wilderness resources.

7. Conflicts between wilderness recreationists and livestock grazing can be reduced by informing recreation users where and when grazing is occurring. Also livestock can be routed around popular recreation areas during periods of heavy use, or trailing of livestock can be encouraged during periods of lower use.

8. Uncontrolled dogs in frequently used areas (transition or semi-primitive) degrade the experiences of other wilderness users. If dogs are on a leash and attended by the owners, their presence in these areas is more acceptable. In the more remote areas (primitive and pristine), dog harassment of big game can be a problem. A leash law provides wildlife the seclusion it needs. An approach in the past has been to allow a dog to be under the immediate control of the owner. This has proved to be unenforceable; immediate control is not well defined. A leash only law is easy to communicate to the public and provides compatibility with wildlife and other visitors.

9. Only the west half of the top of Maroon Peak is in a pristine area; the other half and the climbing routes to it are in a primitive area.

10. The campsite carrying capacities are determined by using the campsite spacing criteria on pages 25, 33, and 36 described in the Management Prescriptions, the amount of land suitable for campsites, and the demand for campsites.

11. The firewood around Crater Lake, Copper Lake, Snowmass Lake, Geneva Lake, Avalanche Lake, and Conundrum Hot Springs is scarce due to overuse of these areas. People who anticipate using a campfire in these locations are destroying live vegetation for firewood. The high use of these areas compiled with campfire use has produced unacceptable damage to the foreground scenery. Foreground views will become acceptable once campstoves are brought into use. Those people who still want a campfire can have one, 1/4 mile from these destinations.

12. Snowmass Lake is one of the most heavily used backcountry lakes in the MBSW. The area within 1/4 mile of the lake is highly visible to the public. Horses can quickly degrade the area with manure, trampling, and pawing at tree roots.

13. Semi-primitive areas are very narrow and small. Many times the best place to locate a large party campsite, secluded from the main travel corridor, is 200 feet off a trail. This usually places it in a primitive area.

APPENDIX W

RATIONALE FOR WILDERNESS PARTY SIZE LIMITATIONS

APPENDIX W

RATIONALE FOR A WILDERNESS PARTY SIZE LIMITATION IN THE MBSW

by
B.L. Driver
Rocky Mountain Forest and Range Experiment Station
and

Robert C. Lucas
Intermountain Forest and Range Experiment Station

Summary

This appendix integrates some thoughts and research results on the question of limitations on size of parties of people and saddle-pack animals in wilderness and primitive areas. Although the discussion is general, recommendations are made only for the Maroon Bells-Snowmass Wilderness (MBSW). No definitive answer is claimed concerning the "appropriate" party size for the MBSW, but given the use patterns of that wilderness, it is suggested that: (1) a maximum party size of not more than 10 pack or saddle animals and not more than 10 people should not create much negative user response in that area; (2) field level line officers (such as forest supervisors) should have the authority to issue special permits to accommodate parties larger than that size if such a party size limitation were adopted; and (3) the impacts of such a limitation, especially impacts on commercial outfitters, should be monitored.

Purpose and Scope

The question frequently arises about whether or not limitations should be set on the number of people and saddle-pack animals allowed in a particular wilderness or primitive area. For example, as of November 1980, 77 out of 127 USDA Forest Service wilderness and primitive areas had some type of limitations on use.[1] Those limitations vary greatly in application, with some limiting numbers of people and some limiting size of parties.

This appendix focuses only on party size limitations and interprets some research results on that issue. Research on related topics will be reviewed when results of that research can be used to make inferences about what might be an appropriate party size. No attempt is made to mention each research study done on the subject. Instead, the purpose is to review the research done in the MBSW, and other wilderness and primitive areas, to support recommendations for the MBSW.

---

[1]Personal communication with Glenn Haas, Recreation Management Staff, USDA Forest Service, Washington, D.C.

Research Results

Two broad categories of research will be reviewed: studies of impacts of parties of people and studies of impacts of pack-saddle stock.

Impacts of Parties of People

Several studies have dealt directly with adverse impacts of people party size. From those studies, the generalization can be made that there is considerable research support for the contention that larger groups cause greater adverse social-psychological impact than do smaller groups.

Regarding group size, a 1978 mail questionnaire study (see Appendix D) of the MBSW asked the users: "What is the total number of people in one party that the U.S. Forest Service should permit in the Maroon Bells-Snowmass Wilderness?" Overall, mean values given by users of four of the MBSW subareas (reflecting different types of features and use densities) were 8.1, 8.7, 8.1, and 11.0 (Region 2, USDA Forest Service, 1980). The percentage of all users giving different party size preferences in response to that question are shown in Table 1. Those responses reflect a social-psychological preference of the users and were not tied to a particular reason such as adverse ecological impact. It can be noticed that only 13 percent favored party sizes of 11 or more. The average size of party for the summer, fall, and winter/spring users of the MBSW were 3.3, 2.5, and 2.7 people.

Table 1. MBSW respondents' preferences for the total number of people that should be permitted in one party (sample size = 270).

Total Party Size Preference	Percent of Sample Preferring That Party Size	Cumulative Percentage
1 - 3	2	2
4	9	11
5	19	30
6	22	52
7 - 8	13	65
9 - 10	22	87
11 - 50	13	100

The same questionnaire asked the users how much they would favor or oppose a management action "restricting party size to ten or less people." Percentages of users, in the four different subareas of the MBSW, who gave a favorable response were 88, 81, 82, and 89 respectively, with 6, 12, 9, and 0 percent opposing that possible management action. The remaining

percentages were made up of users who responded they were neutral on that issue. At least 75 percent of those favoring the action (by the four subareas) favored it strongly or very strongly, rather than moderately or just a little. These data show very high support and very little opposition for limiting groups to 10 or fewer people. Opinions were not solicited for other group sizes. Also, the respondents were not offered the explicit option of "Set No Limit on Party Size" as was done in the 1979 study of the John Muir and Kaiser Wildernesses in California reported below.[2]

In a summer 1979 mail questionnaire study of the Sierra National Forest, users of the Kaiser and John Muir Wildernesses were asked to "Give their estimate of the maximum number of people per party that should be allowed in each wilderness," and "If you do not think a maximum number should be set, write NONE in the space provided." Users of those two areas also were asked to list that one activity which was the one they had spent the most time doing while in the Sierra National Forest. Table 2 shows results for those Sierra National Forest users who reported they had used the Kaiser or the John Muir Wilderness "during the past five years." That table shows that about two-thirds of the users preferred not more than 10 people per party. However, those percentages are lower than the 87 percent of MBSW respondents who expressed preferences for party sizes of 10 or fewer people. Perhaps those studies would have shown more similar results if the question had been identical in both questionnaires, and the MBSW users had expressed a preference for no party size limitations. Alternatively, the users of the MBSW might actually have a stronger preference for smaller party sizes.

Support for small group size is also found in studies which compared preferences for large or small groups. The MBSW study asked the respondents to rate which one of two alternatives they favored in a set of such decision situations. The results are given in Table 3. Those results show that users strongly preferred smaller parties to larger parties, especially when they were camping. Those data do not say what absolute party size is preferred, but combined with the other MBSW data given above, the conclusion can be reached that a party size of 10 or more is not preferred by a high percentage of on-site users of the MBSW or of the John Muir and Kaiser Wildernesses.

Stankey (1973) found that many small parties (defined as "about three persons") were much preferred to one large party (defined as 30 or more persons, which is really a large party). In fact, he found that in three of the four wilderness areas studied, 10 small parties were preferred over one large party. Those data, reproduced directly from his report (page 22) are shown in Table 4. In the same study, 54, 68, 80, and 69 percent of the users of the areas (listed in the order shown in Table 4) concurred with the statement "Seeing a large party (a dozen or more people from a club, and so forth) reduces the feeling that you're out in the wilderness" (page 21).

---

[2]That study was funded by Region 5 of the USDA, Forest Service and was done cooperatively by CSU and RMS, with reports on results available from RMS.

Table 2. Kaiser and John Muir Wilderness users' estimates of maximum number of people that should be allowed per party in the wilderness they visited, by all wilderness users sampled and by users of the wilderness who spent the most time either hiking or fishing while visiting the Sierra National Forest during the visit when contacted in 1979.

Maximum Number of People/Party	John Muir Users						Kaiser Users					
	All Users		Hikers		Fishermen		All Users		Hikers		Fishermen	
	%	Cum.[a] %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %
1 - 3	1	1	2	2	0	0	1	1	3	3	0	0
4	12	13	11	13	15	15	11	12	7	10	15	15
5	9	21	13	26	7	22	10	22	14	24	11	26
6	15	36	17	43	13	35	15	37	19	43	11	37
7 - 8	9	45	6	49	15	50	11	48	10	53	15	52
9 - 10	16	61	13	62	15	65	16	64	21	74	14	66
11 - 12	5	66	8	70	2	67	4	68	7	81	2	68
+12	12	78	18	88	8	75	8	76	8	89	5	73
No Limit	22	100	12	100	25	100	24	100	11	100	27	100
Sample Size	392		91		93		334		73		96	

[a]Cum. % = cumulative percent.

Table 3. Percentages responses to paired comparisons for MBSW wilderness and nearby backcountry users (6/22-9/10/78).

Set No.	Sets of Alternatives	Percent Favoring Each Alternative: MBSW (sample size = 269)	Backcountry (sample size = 173)
1	Passing one party of 5 hikers on trail	93.0	82.2
	Passing one party of 5 horseback riders on trail	6.6	17.8
2	Passing two parties of 5 hikers on trail	81.3	79.6
	Passing one party of 10 hikers on trail	13.1	20.4
3	Passing one party of 5 horseback riders on trail	38.4	45.8
	Passing one party of 10 hikers on trail	61.2	54.2
4	Passing one party of 5 horseback riders on trail	31.8	40.1
	Passing two parties of 5 hikers on trail	67.5	59.9
5	Camping near two parties of 5 people	80.1	81.0
	Camping near one party of 10 people	19.1	19.0
6	Camping near one party of 10 people	1.6	2.4
	Camping near one party of 5 people	97.6	97.6
7	Camping within hearing of other people	28.4	35.4
	Camping within sight of other people	70.8	64.6
8	Passing one party of 5 people on trail	94.9	89.0
	Camping near one party of 5 people	4.7	11.0

Table 4. User preference (in percent) for a single large party (30 or more persons) or a variable number of small parties (about 3 persons). Stankey, 1973.

Area	One Large Party	One Small Party	Don't Care	One Large Party	Five Small Parties	Don't Care	One Large Party	Ten Small Parties	Don't Care
BWCA	7	70	23	15	60	26	19	48	33
Bob Marshall	4	79	17	24	47	28	36	33	31
Bridger	4	88	8	16	68	16	23	56	21
High Uintas	3	73	24	14	57	29	25	43	32
Average	5	77	18	17	58	25	24	46	30

Badger (1975) also found that users of the Rawah Wilderness in Colorado favored "small" parties (defined by Badger as 1-5 people) over "large" parties (defined by Badger as more than five people). But it should be noted that he defined a large party differently from Stankey. He also found that effects of party size, total numbers of encounters per day, and types of encounters on user satisfaction could be defined both in terms of the levels that could be tolerated (and still have a satisfactory wilderness experience) and in terms of the levels that would be preferred for an ideal experience.

In addition to Stankey and Badger, other studies strongly support the idea that large parties have a strong negative effect on the smaller parties which are typical of most wildernesses. Cicchetti and Smith (1976) obtained similar results using a willingness-to-pay approach and an econometric analysis for the Spanish Peaks Wilderness. Towler (1977) did also in his study of hikers in the Grand Canyon. In fact, large parties (defined by Towler as "a dozen or so") elicited a stronger negative reaction than aircraft or motorboats on the river. Lucas (1980) also found that users of the nine wilderness areas he studied generally reported that large parties reduced their overall satisfaction.

Other studies inferentially support the idea that low levels of encounters with other users are desirable, but they do not focus on party size as such. Lucas (1964) found in his study of the Quetico-Superior area that when users reported that 6-10 parties of other users were actually contacted in a day, a majority of the users would, at that contact level, report such use levels "bothered" them. Walsh et al. (1980 a and b), in two studies of Colorado wildland recreationists, including wilderness users, attempted to relate users' willingness to pay (for specified recreation opportunities) to on-site user density (or congestion). Users were asked how much they were willing to pay (if they hypothetically would have to pay higher total trip costs) to use the opportunity (which they were using when contacted during the field research) if different numbers of people would be encountered per day during their visit. Total willingness to pay for all users sampled decreased as "congestion" increased. For five different user groups, that point of other user contact (per day) was identified at which total revenue would start to decline (or marginal revenue would be zero). Put differently, the number of daily encounters was defined at which total economic revenue would be maximized if the users' hypothetical willingness to pay higher trip costs were, in fact, captured, or realized. These values were then converted to an "economically optimal number of other users present per day" figure. Those figures were 11.7, 7.6, and 10.6 other person-user contacts per day for fishing, kayaking, and rafting, respectively (Walsh et al. 1980a), and 11.3 for high mountain reservoir fishing (Walsh et al. 1980b).

Quite a few studies show that the behavior of other people in wilderness areas can have greater adverse impacts on the quality of wilderness recreation experiences than numbers of other users. For example, Stankey (1973) found that two-thirds of the users he surveyed in the Table 4 study felt that a littered campground represented a more disturbing situation than too many people (page 24). Badger (1975) found that 96 percent of his Rawah sample reported that "seeing litter" was more disturbing than "seeing people."

Table 5. Kaiser and John Muir Wilderness users' estimates of maximum number of pack or saddle animals that should be allowed per party in the wilderness they visited, by all wilderness users sampled and by users of the wilderness who spent the most time either hiking or fishing while visiting the Sierra National Forest during the visit when contacted in 1979.

Maximum No. of Pack-Saddle Animals/Party	John Muir Users						Kaiser Users					
	All Users		Hikers		Fishermen		All Users		Hikers		Fishermen	
	%	Cum.[a] %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %	%	Cum. %
0	9	9	16	16	4	4	8	8	18	18	4	4
1 - 6	42	51	48	64	43	47	40	48	40	48	39	43
7 - 12	19	70	17	81	20	67	20	68	15	63	25	78
+12	8	78	3	84	10	77	9	77	4	67	7	85
No Limit	22	100	16	100	23	100	23	100	23	100	25	100
Sample Size	392		91		93		334		73		96	

[a]Cum. % = cumulative percent.

Any research support for limitations on numbers of pack-saddle stock per party is indirect, and rests on the negative reaction many hikers have to horse parties and the greater environmental impacts of horses. Smaller numbers of horses clearly help limit the environmental impacts, but it is not clear that those hikers who feel horse use is inappropriate will be appreciably mollified by meeting somewhat smaller horse parties.

Conclusions

Given the results of the above studies, some general conclusions can be stated:

1) More research is needed.

2) Data do not yet exist to say absolutely that any one party size limit should be established. However, there is strong support for the contention that people party sizes larger than 8-12 are strongly not preferred by large percentages of users during the peak months of wilderness use.

3) Party size and numbers of encounters do affect user satisfaction, but so do many other aspects of the total wilderness experience. The fact that some studies show that overall user satisfaction can be reported as high, even under undesirable density levels, should not be interpreted that such high density levels are desired.

4) Preferences for party size limitations vary by type of user, from area to area, by type of encounter, and by location of encounter. In areas where large parties and certain types of use, such as horse use, are common, there seems to be greater acceptance of those types of use. This does not mean that wilderness values (such as provision of opportunities for solitude or protection of the resource from adverse ecological impacts) are being maintained. It only means there appears to be acceptance. By analogy, a paved highway at the bottom of the Grand Canyon would probably attract large numbers of satisfied users. But that says nothing about the appropriateness of such a policy and management decision.

5) If a party limit of not more than 10 people were set, it would impact relatively few parties in most wilderness areas because most parties are smaller than that in size. For example, Lime (1972) found in his study of the Boundary Waters Canoe Area that most people came in groups of six people or less. See Table 6 which is reproduced from his report. Badger (1975) and Lucas (1980) found high percentages of users in small parties. Their studies are shown in Tables 7 and 8. Similarly, permit data from California wildernesses show few large parties, as do the Table 9 party size data for three Colorado wildernesses. Finally, the average size of party for users of 15 different areas in the MBSW were found to be 3.2, 3.1, 3.4, 3.4, 2.7, 3.4, 3.2, 6.0, 4.4., 3.4, 3.9, 4.3, 3.2, 3.6, and 2.7.

6) Nothing has been said about the economic impacts of party size limitations on the operation of commercial wilderness outfitters. That issue is beyond the scope of this appendix, and we know of no systematic studies related to that issue. However, the research data do suggest strongly that horses cause more adverse biophysical impacts than hikers.

Table 6. BWCA use (watercraft only) by party size for three selected recreation use classes, 1971 (Lime, 1972).

Use Class	Total Use	Size of Party (individuals)							
		1-2	3-4	5-6	7-8	9-10	11-12	13-15	16+
	Number	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Parties	31,076	37	37	14	4	3	2	2	1
Visitors	127,499	17	32	18	7	7	6	8	5
Visitor-Days	802,133	16	27	17	8	9	7	9	6

Table 7. Percentage of Rawah users in different party sizes (from pg. 25 of Badger, 1975).

Group Size	Percent	Group Size	Percent
1	10.1	8	1.6
2	40.4	9	1.6
3	9.6	10	.5
4	14.9	12	.5
5	9.6	15	1.1
6	7.4	16	1.1
7	1.1	28	.5

Table 8. Party size by area (from pg. 19 of Lucas, 1980).

Area	Average size	Percent of total parties of indicated size[1]							
		1	2	3	4	5-10	11-20	21-30	30+
Desolation Wilderness	3.8	10	33	13	20	18	4	0	0
Selway-Bitterroot Wilderness	4.5	5	26	16	23	22	4	1	1
Bob Marshall Wilderness	4.7	6	21	15	13	42	0	2	0
Cabinet Mountains Wilderness	4.0	5	35	17	17	17	2	2	0
Scapegoat Wilderness	5.6	6	27	18	15	20	9	3	2
Mission Mountains Wilderness	4.5	5	29	15	12	31	4	0	1
Spanish Peaks Primitive Area	4.8	8	25	16	15	27	5	1	0
Great Bear Wilderness	5.2	0	21	14	28	26	7	0	0
Jewel Basin Hiking Area	5.4	3	31	16	19	21	4	1	1

[1]Party size information was missing from a few questionnaires. Here and in other tables, missing data are omitted so percents do not always add up to 100.

Many similar results were found in the 1978 MBSW study. Lucas (1979) reported similar findings, and reached the conclusion that actual biophysical impact is less of a concern to most wilderness users than is litter.

Research knowledge about the impact of user party size on the biophysical environment is much more limited than about the social impacts. However, research by Holmes and Dobson (1976) does suggest that the impacted, devegetated area in campsites increases as parties get larger. They stated that the impacted area (not necessarily bare ground) is about 12 square meters per person in a party, although they feel the relationship might be geometric (i.e., large parties require more space per person) because congestion interferes with movement.

Impacts of Pack and Saddle Stock

Although there is considerable evidence that many wilderness hikers object to pack and saddle stock and their droppings on the trails, few studies have looked at effects of size of stock train on user satisfaction specifically.

In the 1979 Sierra National Forest study, users of the John Muir and Kaiser Wildernesses were asked to estimate the maximum number of pack and saddle animals that should be allowed in each area per party. Their response to that question is shown in Table 5. Those data were not recompiled, for this appendix, into the same party size classes shown in Table 2. But they do show that strong majorities of the users (63 to 81 percent) prefer 12 or less pack or saddle animals per party. Also, the percentage preferring less than 7 pack or saddle animals per party are about twice those preferring less than 7 people per party. The data on zero pack-saddle animals per party in Table 5 suggest stronger overall opposition to horse, than to people use. Lucas (1980), in studies of nine wilderness area users, also found (pages 65 and 66) that encounters with horse parties were perceived to reduce satisfaction more than encounters with large parties of people.

There are several studies which show more severe biophysical impacts by horses (or parties using horses) than hikers. These results probably suggest the high priority of limits on horse numbers, as well as efforts to encourage adoption of lower-impact horse-handling methods by horsemen. Frissell (1973) found, in a Spanish Peaks study, that horse-use campsites were ten times larger than non-horse sites and had seven times more bare ground. McQuaid-Cook (1978) concludes from her studies that, whereas people tend to compact trails, horses tend to loosen soil, which leads to more deeply eroded trails. Finally, in three studies (Weaver and Dale 1978, Douglas et al. 1975, and Whittaker 1978) using experimental trampling, it was found that horses cause more damage to vegetation and soil. Although the short-term nature of these studies makes generalizations difficult, those studies do suggest that horses might be at least three times as destructive as people.

Table 9. Size of parties visiting the Weminuche Wilderness, Rawah Wilderness, and the Eagles Nest Wilderness during the summer of 1977.

Size of Party	Weminuche[a]		Rawah[b]		Eagles Nest[c]	
	Number of People	Percentage (N=312)	Number of People	Percentage (N=210)	Number of People	Percentage (N=269)
1	27	9	12	6	18	7
2	112	36	88	42	107	40
3	36	12	25	12	34	13
4	51	16	37	18	55	21
5	26	8	15	7	16	6
6	17	5	6	3	14	5
7	5	2	8	4	4	2
8	11	4	6	3	5	2
9	4	2	1	1	3	1
10 or more	23	7	12	6	13	5

[a]Average size equaled 4.4; median size was 3.0.

[b]Average size equaled 4.0; median size was 2.7.

[c]Average size equaled 3.6; median size was 2.6.

Source: Unpublished cooperative CSU and RMS studies.

7. Except for any adverse impacts of party size limitations on commercial outfitters, it seems reasonable to state that a party size limitation of not more than 10 people during the peak months of use could be implemented in many areas with many advantages and few disadvantages. Limits on pack-saddle stock, from 10 to 20 animals, might also be advantageous, although a limit on number of people will strongly influence the number of stock. Also, an information campaign could encourage changes in stock use practices to reduce impacts and to stress the advantages of taking fewer animals.

8. Except for day-rides, where no pack stock is usually needed, the total number of saddle and pack stock is almost always greater than the number of people. Very few people on short trips carry equipment on their saddle horses. In the hunting season, cold-weather equipment, hunting gear, and game meat require more pack animals per visitor than summer trips. If summer visitors used light-weight, backpacking types of equipment, one horse could probably carry three, four, or even five people's gear. Therefore, if both stock and people party size limitations are set, it would be appropriate in some areas, or at some times, to permit a larger number of pack-saddle stock than people.

9. If either people or stock party size limitations are set, area managers should be given discretion to issue permits for larger parties when the conditions dictate.

10. Any limitations set should be monitored as to their bad and good effects.

Recommendation for the MBSW

Given the above thoughts, it is recommended that a year-round party size limitation of not more than 10 people and not more than 10 pack-saddle animals be established for the MBSW. The limitation on pack-saddle animals is recommended because the MBSW appears to be different from many other wilderness areas in that the amount of horse use is quite low and the users are not accustomed to seeing, nor do they prefer to see, large party sizes. The party size limitation just recommended might be larger than optimal, but it is a place to start. The provisions should be made that the Forest Supervisor can issue special permits for larger parties on a case by case basis, and that once implemented, the recommended party size limitation be monitored as to its advantages and disadvantages, including the impacts on commercial outfitters. Given the nature of use of the MBSW, no need is readily apparent for having different party size limitations during different seasons of use in that area.

An alternative to the above recommended regulation would be for managers of the MBSW to encourage, but not require, party sizes of not more than 10 pack-saddle animals and not more than 10 people. Such encouragement by an educational program could be concentrated on informing potential users before they arrive at the area. Such an approval was considered, but it is not recommended because it is expected that it would not be sufficiently effective, and conscientious people would suffer.

Literature Cited

Badger, Thomas J. 1975. Rawah Wilderness crowding tolerances and some management techniques: an aspect of social carrying capacity. M.S. thesis, Colorado State University, Ft. Collins. 83 p.

Cicchetti, Charles J. and V. Kerry Smith. 1976. The costs of congestion. Cambridge, Mass.: Ballinger, 113 p.

Douglas, G.W., J.A.S. Nagy, and G.W. Scotter. 1975. Effects of human and horse trampling on natural vegetation, Waterton Lakes National Park. Canadian Wildlife Service Report, Edmonton.

Frissell, S.S. 1973. The impact of wilderness visitors on natural ecosystems. Completion report for the USDA For. Serv. Intermtn. For. and Range Exp. Stn., Missoula, Montana.

Holmes, Daniel O. and Heidi E.M. Dobson. 1976. Ecological carrying capacity research: Yosemite National Park. Part I: the effects of trampling and urine on subalpine vegetation, a survey of past and present back-country use, and the ecological carrying capacity of wilderness. (NTIS no. PB-270 955.) Calif. Univ., Berkeley, Dept. of Plant Pathology, Natl. Park Service Contract CX 8000-4-0026. 247 p.

Lime, David W. 1972. Large groups in the Boundary Waters Canoe Area -- their numbers, characteristics, and impact. USDA For. Serv. Res. Note NC-142. 4 p. North Central For. Exp. Stn., St. Paul, Minn.

Lucas, Robert C. 1964. The recreational capacity of the Quetico-Superior area. USDA For Serv. Res. Pap. LS-15. 34 p. Lake States For. Exp. Stn., St. Paul, Minn.

Lucas, Robert C. 1979. Perceptions of non-motorized recreational impacts: a review of research findings. Wilderness Management Research, Intermtn. For. and Range Exp. Stn., USDA For. Serv., Ogden Utah.

Lucas, Robert C. 1980. Use patterns and visitor characteristics, attitudes, and preferences in nine wilderness and other roadless areas. USDA For. Serv. Research Paper INT-253, Intermt. For. and Range Exp. Stn., U.S. Dept. of Agriculture, For. Serv.

McQuaid-Cook, J. 1978. Effects of hikers and horses on mountain trails. J. Environ. Mgmt. 6:209-212.

Region 2, USDA Forest Service. Draft interim direction for the Maroon Bells-Snowmass Wilderness. Denver, Co.

Stankey, George H. 1973. Visitor perception of wilderness recreation carrying capacity. USDA For. Serv. Res. Pap. INT-142. 61 p. Intermt. For. and Range Exp. Stn., Ogden, Utah.

Towler, William L. 1977. Hikers perception of wilderness: a study of the social carrying capacity of Grand Canyon. Arizona Review, Vol. 26, nos. 8-9, pp. 1-10.

Walsh, R. G., R. K. Erickson, and D. J. Arosteggy. 1980a. An empirical application of a model for estimating the recreation value of stream flow. Completion Report No. 101, Oct. 1980, Colorado Water Resources Research Institute. Colorado State Univ., Ft. Collins, Co. 63 p.

Walsh, R. G., R. Aukerman, and R. Milton. 1980b. Measuring benefits and the economic value of water in recreation on high country resources. Completion Report No. 102, Sept. 1980, Colorado Water Resources Research Institute. Colorado State Univ., Ft. Collins, Co. 50 p.

Weaver, T. and D. Dale. 1978. Trampling effects of hikers, motorcycles, and horses in meadows and forests. J. Appl. Ecol., Vol. 15, pp. 451-457.

Whittaker, P. L. 1978. Comparison of surface impact by hiking and horseback riding in the Great Smokey Mountains National Park. Management Rept. 24, National Park Service, Southeast Region.